

# Theophrastus of Eresus

ON WEATHER SIGNS



EDITED BY

DAVID SIDER

& CARL WOLFRAM BRUNSCHÖN





Vienna, Cod.phil.gr. 1, fol. 481<sup>v</sup>, an illustration from Dionysios *De Aucupio* of a *kerphos*. See *De Signis* 28.193, with commentary. The text below the image says Κέπφον δ' ἕτερον ὄρνεον ἐκ τῆς κουφότητος οἱ ἀλιεῖς ὀνομάζουσιν (2.11). Used with kind permission of the Österreichische Nationalbibliothek/Bildarchiv.

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to Sandra and Maria



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## PREFACE

Work on this book began when Bill Fortenbaugh called David Sider out of the blue to ask whether he would be interested in editing both *De Signis* and the more indubitably Theophrastean *On Winds* for the latest addition to Project Theophrastus, a series of texts of and commentaries on the opuscula of Theophrastus; that is, all those works existing complete (or relatively so) in manuscripts other than his two big works on plants and the *Characters*. Sider, having recently finished his commentary on the epigrams of Philodemos and wondering what big task to engage in next, said yes (and was later happy to relinquish *On Winds* to others). Since *De Signis* has a manuscript tradition different from and more complicated than that shared by the other Theophrastean opuscula, it was soon clear that autopsy of all the manuscripts was called for. A census of Theophrastus' mss. had been prepared by Nigel Wilson, which saved much labor, but an appeal to Dieter Harlfinger seemed like a good idea, for he if anybody would know of any missed by Wilson. Indeed, the table of contents of a ms. in Turin failed to note that *De Signis* was present, since this work follows on the preceding work without any notice that a new one has begun. Harlfinger also informed Sider that one of his students, Carl Wolfram Brunschön, had recently prepared a seminar paper on the Überlieferungsgeschichte of *De Signis*, following up on an earlier paper by Harlfinger and Dieter Reinsch. Soon after Harlfinger arranged a meeting between Sider and Brunschön, they agreed, with Fortenbaugh's blessing, to co-edit the text. For the most part, the initial writing was done by Sider, but there has been constant consultation between the two and there is a lot more to a book than the initial writing. Brunschön is chiefly responsible for the brief description of the mss., and in what may seem like an odd division of labor, while Sider prepared the Greek text itself, Brunschön took charge of the critical apparatus, making use of some sophisticated programs he had designed for use at the Corpus Medicorum Graecorum, where he is a Wissenschaftlicher Mitarbeiter. He also took on the task of preparing the pages of the book in pdf, the modern equivalent of camera-ready text, for our publisher. At a later stage of our work, it was decided to add an appendix containing a newly edited text of *De Ventorum Situ*, which supposedly formed part of Aristotle's *De Signis*, and which, as the introduction will try to make clear, may be related in form to the *De Signis* edited here. This task

has been undertaken by Victor D'Avella, who would like to thank Dieter Harlfinger for allowing him access to the microfilms of this work at the Aristoteles Archiv in Berlin.

At an early stage, the commentary greatly benefited from a critical reading by Marlein van Raalte. Toward the end, it was read by two of the Project Theophrastus editors, Bill Fortenbaugh and Bob Sharples, as well as by the editor of Brill's *Philosophia Antiqua* series, Keimpe Algra. To all we are grateful for their acute observations, although they cannot be held responsible for what failings remain.

Sider gives thanks to the National Endowment for the Humanities for aid in travelling to read the manuscripts, and to Fordham University and then to New York University for time off to work on the book. Brunschön thanks the *Corpus Medicorum Graecorum* for distinct discussions. We are also grateful to the kind reception we individually received at the manuscript reading rooms in Paris, Venice, Milan, Vatican City, Turin, and Florence. (And since Sider became deathly ill from food poisoning while working in the manuscript reading room of the *Bibliothèque Nationale*, he is especially thankful to les *Pompiers de Paris* stationed in the Richelieu Palace for their expert first aid.) Also helpful to Sider were the librarians of the New York Botanical Garden in the Bronx, the New York Academy of Medicine, the Morgan Library, the Museum of Natural History (the only library in New York City to own a set of Schneider's *Theophrastus*), and, at Yale, the Beinecke library and the Historical library of the Medical school (one of the very few places to own a copy of Bonaventura's commentary); as well the ever-reliable librarians at Fordham, Columbia, and New York Universities.

In addition to Dieter Harlfinger for the reasons outlined above, we also thank the following for answering queries on difficulties raised by the text: Elke Böhr and Kristin Olson Murtaugh (for help on birds), Maria Vasiloudi (for a convincing answer to a textual crux), John Scarborough (for sharing his knowledge of myriapods), Kenneth Lapatin (for guidance on rare stones), Douglas Hutchinson (for helping to make sense of the chronology of Eudoxos), Liba Taub (for guidance on meteorology), Daryn Lehoux (for discussion over beer about *parapegmata*), Regina Höschele (for transcribing the relevant parts of Camerarius' preface to the 1541 *Theophrastus*), and Colin King (for providing a place to sleep and a bike to ride when Sider was in Berlin). We also thank Silke Pirolt of the Austrian National Library/Bildarchiv for her help in providing our frontispiece. Nor do we forget our wives Sandra Sider and Maria Vasiloudi, who have supported our efforts during the long course of preparing this work.

## INTRODUCTION

1) *Predicting the weather.*<sup>1</sup> Could there ever have been a farmer or sailor who would not want to know the weather of the next few minutes (especially the sailor) or days (the farmer)?<sup>2</sup> Weather over the long term—the year is the longest—is also knowable, even if only *grosso modo*: Winters will surely be cold, at least relatively so, and summers will be hot, and every region will have a rainy season or two. But within every season there will be a range the extremes of which will either encourage/allow or deter/prevent particular activities. Some of these deviations from the norm could be predicted, but not everybody could know (or be expected to remember) all the advance signs of these deviations from the norm. The ordinary person needed either a nearby expert (especially before the spread of literacy) or a handy source of reference.<sup>3</sup>

<sup>1</sup> Basic to what follows is R. Böker, “Wetterzeichen,” *RE Suppl.* 9 (1962) 1609–92; cited throughout simply by name and column number.

<sup>2</sup> **Farmers** and **sailors** are typically the main audiences named or clearly assumed; note esp. Sext. Emp. *Adv. math.* 5.1 (quoted below, p. 14), but note also the following sorts named by Aratos: **millers** (1044–46) and **herdsmen** of various sorts—goats (1098), sheep (1104), cattle (1113)—as well as the luckless man (ἄνολβος ἀνήρ, 1073), who could be anybody. P. Bing, “Aratus and his audiences,” *MD* 31 (1993) 99–109, reasonably connects Aratos’ inclusivity with the fact that he keeps the addressee of his poem unspecified (many 2nd person singular verbs, but no vocatives). Lucan and Vegetius (see below, section 4) list signs of use to **military planners**. Poseidippos *Epigrams* 24–25 Austin-Bastianini contain weather signs said to be of interest to **fishermen**. Pliny *NH* 18.225 credits canny clothing **merchants** with the ability to foretell the next season’s weather and thereby to price their clothing accordingly. Nobody in the technical weather literature specifies **physicians**, but note that they themselves are aware of weather’s importance; cf. Hipp. *Aer.* 1–2, who urges the physician to “read” the topography upon arriving in a new location. This includes its disposition in respect to the sun and how the winds blow. “If someone think that these things are meteorological in nature, upon reflection he will learn that astronomy is of the greatest significance in medicine” (2.3). Other physicians mention the need to pay attention to weather; e.g., Galen 9.914, 17a.15 K and Aëtius Amidiensis *Iatr.* 3.164 (in a wider context making the same point) τῶν ὑγιαίνόντων τὰ σώματα καὶ πολλῶ μᾶλλον τῶν νοσοῦντων ἀλλοιοῦται πρὸς τὴν τοῦ ἀέρος κατὰστασιν. Note also [Arist.] *Probl.* 1.1–29, which offers many questions concerning the relationship between various ailments and winds and other seasonal changes; cf. Demokr. ap. *Geop.* 1.15.19, quoted below, p. 7. Cf. J. H. Phillips, “The Hippocratic physician and ἀστρονομίη,” in F. Lasserre and P. Mudry (eds.), *Formes de pensée dans la Collection hippocratique* (Geneva 1983) 427–434; and, for a broader survey, V. Langholf, *Medical Theories in Hippocrates* (Berlin 1990) 164–179.

<sup>3</sup> An excellent episode illustrating the layman’s recognition of his own ignorance appears at *Il.* 4.73–85, where an ordinary (τις) soldier, seeing a shooting star just before a battle, interprets it as cautiously as possible: ἢ ῥ’ αὐτίς πόλεμος ... ἔσσειται, ἢ φιλότητα

For the Greeks, all weather is due to Zeus, but although he may signal a successful battle or Odysseus' return with the visually impressive flight of an eagle,<sup>4</sup> he cannot be bothered to give such dramatic advance warning for every high wind or piddling rain. Other signs were sought. And although all were called Διοσημίαι,<sup>5</sup> these came to be understood, at least implicitly, in the more scientific literature as signs of Zeus (= sky), not from Zeus (the sky god).<sup>6</sup>

Thus arose a collection of observations of two main sorts. One was calendrical, reminders of the annual revolution of seasons and their associated normal weather. The best signs of this class are the risings and settings of particular stars or constellations,<sup>7</sup> although other annual occurrences, such as the regular passage of migrating birds, were also employed. Hesiod's *Works and Days* is the *fons et origo* of material of this sort for later Greek and Latin literature. Observations like these were put on a more scientific basis after Hesiod when the likely weather for every day of the year was written down on *parapegmata* (on which see below, p. 9 f.).

... τίθησι Ζεύς. Prometheus tells of a time of total ignorance even of the change in seasons: ἦν δ' οὐδὲν αὐτοῖς οὔτε χεῖματος τέκμαρ | οὔτ' ἀνθεμώδους ἦρος οὔτε καρπίμου | θέρους βέβαιον (Aisch. *PV* 454–6). (Although *DS* avoids the word, τέκμαρ occurs often in weather literature as a synonym for σημά). Sailors who have misread the signs will have to call upon the Dioscuri for aid: Theokr. 22.6 ἀνθρώπων σωτήρας ἐπὶ ξυροῦ ἤδη ἐόντων.

<sup>4</sup> On which, see D. Collins, "Reading the birds: *Oiōnomanteia* in early epic," *Colby Q.* 38 (2002) 17–41; P. Cronin, "Weather lore as a source of Homeric imagery," *Hellenica* 51 (2001) 7–24; P. Wathelet, "La météorologie dans les comparaisons homériques," in C. Cusset (ed.), *La Météorologie dans l'antiquité: entre science et croyance* (Saint-Étienne 2003) 203–216; W. Leszl, "I messaggi degli dei e i segni della natura," in G. Manetti (ed.), *Knowledge through Signs: Ancient Semiotic Theories and Practices* (Turnhout 1996) 43–81.

<sup>5</sup> First in Aristoph. *Ach.* 170 f. of a portent, when Dikaiopolis wants to adjourn the *ekklesia* because of (an imaginary) rain: λέγω δ' ὑμῖν ὅτι | διοσημία 'στὶ καὶ ῥάνις βέβληκέ με. (The scansion of the word here guarantees that this, not the διοσημία often found in mss., is the original form.) The scholion ad loc. defines the word as χειμῶν παρὰ καιρόν.

<sup>6</sup> The poets are an exception. Note how Hesiod introduces the *Days* section (765–769):

ἥματα δ' ἐκ Διόθεν πεφυλαγμένους εὖ κατὰ μοῖραν  
πεφραδόμεν δώδεσσιν· τριηκάδα μηνὸς ἀρίστην  
ἔργα τ' ἐποπτεύειν ἥδ' ἄρμαλιν δατέασθαι,  
εὖτ' ἂν ἀληθεῖν λαοὶ κρίνοντες ἄγωσιν.  
αἶδε γὰρ ἡμέραι εἰσὶ Διὸς παρὰ μητιόεντος.

Cf. also Aratos 5 f. (Zeus) ἀνθρώποισι | δεξιὰ σημαίνει and, at the beginning of the section on weather signs, 743 ἐκ Διὸς ἤδη πάντα πεφασμένα πάντοθι κεῖται. In general, see W. Leszl (above, n. 4) 43–81.

<sup>7</sup> Indeed, in the Bible, God gave stars etc. to men as signs (Gen. 1.14); cf. Philo *De Opif. Mundi* 58; E. Pfeiffer, *Gestirne und Wetter im griechischen Volksglauben und bei den Vorsokratikern* (Diss. Heidelberg 1914) 15 f.

The second class of observations gave warning of a more immediate sort, the equivalent of television weathermen telling us that there is a 50% chance of rain today. Even during winter one would benefit from a sign of *imminent* snow; and close to the beginning of a season one would like to know how it will compare with normal periods: Will the winter be more snowy than usual; the summer more dry? As with the annual (i.e., astronomical) signs, these too divide into meteorological and animal (and some botanic) observations. Clouds of a particular shape, as an example of the first; animals acting in a particular way, of the second.<sup>8</sup> In other words, the first class of weather writing (the Hesiodic) describes the normal; the second class (as in *DS*) treats deviations from the norm.

2) *Writing it down.* The two chief classes of weather prediction do not fit together very well on paper. Annual signs find their natural place in a chronological order that could begin at any point in the year and continue for a complete annual cycle, however this arbitrary point is determined. Hesiod, e.g., starts with the setting of the Pleiades (in our October), a good time for plowing, and he marks the rest of the year with other risings, settings, and the two solstices.<sup>9</sup> Greater refinement (but less poetry) comes when the year was divided into the twelve periods determined by zodiacal constellations, so that one could speak of the likely weather on “the fourth day of Scorpio” (stormy winds, cold temperatures, and frost; see *Geoponika* 218.1).

Within this scheme, however, there is no natural place for the various signs that portend imminent and less regular (παρὰ καιρόν) weather phenomena. Some of them (e.g., a sign of snow) would not belong in a summer month, but that still leaves too many days when snow is possible. Best, then, to segregate them, either in a separate section or in a separate work. Which indeed is what we find: There is, therefore, no duplication between the two chief extant works on weather signs, Hesiod’s *Works and Days* and *De Signis*. Note how Hesiod records the *regular* migratory flight of cranes as an annual sign for plowing and rainy

<sup>8</sup> Epicurus *Ep. Pyth.* ap. D.L. 10.98 and 115 disbelieved in animal weather signs; see below, n. 99. On the other hand, cf. Cic. *Div.* 1.15 *inest in ranunculis vis et natura quaedam significans aliquid per se, ipsa satis certa, cognitioni autem hominum obscurior.* (This appears as a comment on a passage of Aratos, which had just been given in Cicero’s translation.) For a defense of the validity of animal signs, cf. Pliny *NH* 8.102–104. For a survey, see J. Bouffartigue, “Les prévisions météorologiques tirées de l’observation des animaux: Études des sources antiques,” in Cusset, *La Météorologie* (see above, n. 4) 397–414.

<sup>9</sup> Nicely laid out in West’s edition of *Works and Days*, p. 253.

weather in general, whereas *DS* tells its readers how to interpret their *irregular* flight paths, which indicate a storm over the horizon.<sup>10</sup> Aratos (probably following Eudoxos; see below, pp. 13, 15), Vergil in the *Georgics*, and Pliny in book 18 of his *Natural History* present annual/parapragmatic material before passing on to the *para-kairon* signs.

3) *Origin of De Signis (preliminary considerations)*. The pertinent facts are these: (i) Theophrastos and Aristotle are each credited with a libellus on weather signs, *Περὶ σημείων* and *Σημεῖα χειμώνων*, respectively. (ii) All manuscript copies of *DS* are in Peripatetic collections; i.e., each copy appears along with works ascribed (rightly or wrongly) to either Aristotle or Theophrastos. In some of these mss. *DS* is explicitly credited to Aristotle, sometimes it is left anonymous, and once, in a late ms., it is credited to Theophrastos.

Beyond this, one can only conjecture on the basis of form, style, purpose, vocabulary. Since the mss. suggest a Peripatetic origin, three possibilities immediately suggest themselves: (i) *DS*, for the most part a collection of weather signs arranged in an impractical order (see below), was the collection of signs gathered at Aristotle's behest for him to mine while composing his own book on weather signs. (ii) It is the book written by Aristotle or (iii) Theophrastos. But if we further recognize that works of this sort (that is, practical handbook material, with no literary pretensions) regularly suffered alteration in the course of transmission (addition, subtraction, rearrangement—each of which is manifest in the extant mss. of *DS*), then another possibility is that what we possess is (iv) an abridgement of what either Aristotle or Theophrastos wrote.

And if this last is the case, since what we have is largely the signs, stripped of any philosophical underpinning or scientific framework that Aristotle or Theophrastos would surely have supplied, and since the latter would have felt free to make use of many of the same signs that his teacher did, then in a certain sense our *DS* can be thought of as (v) an abridgement of *both* Aristotle and Theophrastos. That is, an abridgement of one would look very much like an abridgement of the other. When does abridgement of a work by author *X* deservedly come to be thought of (when ancient standards of authorship are applied) as a new compi-

<sup>10</sup> *DS* 38.276–9 “If a flock of cranes flies in early morning, it will storm early; but if it flies late and over a long period of time, it will storm late. And if they turn about in flight they signal storm.” 52.379–81 “When cranes fly without turning back, this signals fair weather; for they do not fly until they see a clear sky ahead of them as they fly.”

lation by author *Y*?<sup>11</sup> That is, could we now begin to think of *DS* as the work of (say) Eudoxos, Euktemon, or Hipparchos, if we found evidence pointing their way? The reader will note how many “if”s have been used here.

Perhaps (but we should not be overoptimistic) a comparison between *DS* and Aratos’ *Phainomena* will suggest an answer. If nothing else, Aratos could supply us with a *terminus ante quem* for its composition—on the assumption, which has not always been held, that *DS* antedates Aratos.<sup>12</sup> We return to the subject of authorship below.

4) *Survey of ancient weather literature.* We limit ourselves to Greek and Latin texts (extant or not) that contain a continuous section of more than minimal length expressly devoted to indications of forthcoming weather. Thus, excluded here are tales (with varying degrees of credibility) of various mythical, ordinary, and scientifically inclined individuals<sup>13</sup>

<sup>11</sup> Cf. M. L. West, *Textual Criticism and Editorial Technique* (Stuttgart 1973) 16: “Some kinds of text were always subject to alteration. Commentaries, lexica and other works of a grammatical nature were rightly regarded as collections of material to be pruned, adapted or added to, rather than as sacrosanct literary entities. When the rewriting becomes more than superficial, or when rearrangement is involved, one must speak of a new recension of the work, if not of a new work altogether.” To his list, we should obviously add scientific and technical works, whose truth value would be more important than any desire to maintain the work in the form in which one found it. Any sort of work with practical application would be subject to this constant redaction; for medical works, cf., e.g., H. Grensemann, *Knidische Medizin*, vol. 1 (Berlin 1975) for a detailed analysis of how a medical work could suffer change as it passed through several editions (and from Knidos to Kos). Grensemann has been criticized for exaggerating the importance of these “schools”; cf. A. E. Hanson, “Fragmentation of the Greek medical writers,” in G. W. Most (ed.), *Collecting Fragments / Fragmente sammeln* (Göttingen 1997) 295 f., but note her statement that “however strong the respect for authority and the desire to conserve older texts, these motives competed with ones that looked to current usefulness in day-to-day practice among patients. What was deemed no longer useful to the medicine being practiced might be tacitly discarded” (296). Students of the presocratics will of course immediately think of the great similarities among the works of Stobaios, Ps.-Plutarch, Ps.-Galen, and Theodoret. Also relevant to this subject is R. H. Robins, “The authenticity of the *Techne* [of Dionysios Thrax]: The *status quaestionis*,” in V. Law and I. Sluiter (eds.), *Dionysius Thrax and the Technē Grammatikē* (Münster 1996) 13–26.

<sup>12</sup> Most notably, V. Rose, *Aristoteles Pseudepigraphus* (Leipzig 1863) 245 argued that “Arateum ordinem verbaque Aratea imitatus esse Pseudaristoteles iste [= *DS*] videatur.” For a counterargument, see J. Böhme, *De Theophrasteis quae feruntur* Περὶ Σημείων *excerptis* (Hamburg 1884) 23 ff., who bases much of his argument on the fact that *DS*’s poetic words are not found in their equivalent passages in Aratos (27 f.). (That their order is different proves nothing.) Below, we shall argue that *DS* cannot be dependent on Aratos.

<sup>13</sup> **Mythical:** Atlas. Cf. Herakleitos *Incred.* 4 (Pfeiffer 16) Περὶ Ἀτλαντος. οὗτος παραδέδοται φέρων οὐρανὸν ἐπὶ τῶν ὤμων, ὃ ἀδύνατον ὑπὸ οὐρανὸν καὶ αὐτὸν ὄντα. ἀνὴρ δὲ σοφὸς ὢν τὰ κατὰ ἀστρολογίαν πρῶτος κατώπτευσε, προλέγων δὲ χειμῶνα καὶ



(they are cited when relevant in the commentary) and the many passages, from Homer onward, containing isolated weather signs. We also exclude Egyptian, Mesopotamian, and Biblical material,<sup>14</sup> to say nothing of the literature known from even farther afield, not because it is irrelevant but because it would overwhelm the classical authors, who are our main concern. Also excluded here is *DS* itself, unless, as may be the case, it turns out to equal one of them.

Hesiod's *Works and Days* 765 ff. (6th cent. BC), which provides a literary model, both as didactic poem in general and as a work of weather signs in particular, for all subsequent didactic poets: Aratos, Varro Atacinus, Vergil (see below). As we have noted, however, Hesiod's overall account of the year is distinct from the more immediate concerns of most of the weather literature surveyed here, although many signs in *DS* are season specific; e.g., 17.115 f. "during summer, when many island-dwelling birds show up in dense flocks, they signal rain." But signs of this sort are no different from those that specify the time of day; e.g., 19.126 f. "If a household finch sings at dawn it signals rain or storm." As a result of this division of heavenly signs, although our commentary cites Hesiod for various reasons, not one weather sign is common to Hesiod and *DS*. The setting of the Pleiades, for example, signals the end of the sailing season since storms are now likely; but the *day* of the setting is not in itself a sign that a storm is imminent. At only one place does Hesiod describe a sign of the type that is almost of the sort that regularly occurs in *DS*: Two days after the cuckoo is *first* heard *in spring* (486, κόκκυξ κοκκύζει), there will be a heavy rain. The italicized

μεταβολὰς ἀνέμων καὶ ἐπιτολὰς ἄστρον καὶ δύσεις ἐμυθεύθη φέρειν ἐν αὐτῷ τὸν κόσμον.

**Ordinary people:** A man in Byzantium (Arist. *HA* 612b4) or in Kyzikos (Plut. *Sollert. An.* 971a) observed hedgehogs' shifting entrances to infer which way wind would be blowing (cf. *DS* 30.211–14).

**Philosophers:** Thales, thanks to his studies of the heavens (ἐκ τῆς ἀστρολογίας), knew that the olive crop was going to be a good one (Arist. *Pol.* I, 11 1259a6 ff. [DK 11 A 10], D.L. I.26 [A 1], Cic. *Div.* I.49.111); Empedokles could, he himself said, bring on or avert weather (31 B 111, with Satyros ap. D.L. 8.59); Anaxagoras simply shows up at a public event wearing rain gear on a sunny day; and sure enough it soon rains. Aelian tells a similar story about Hipparchos. According to Apollonios, *Mirabilia* 3, p. 122 Giannini, Hermotimos of Klazomenai could predict fair and foul weather (as well as plague and earthquakes). On the subject of this note, see further D. Sider, "Demokritos on the Weather," in A. Laks and C. Louguet (eds.), *Qu'est-ce que la philosophie présocratique* (Villeneuve d'Ascq 2002) 287–302.

<sup>14</sup> The ancient sources themselves occasionally credit Egyptian, Libyans, and Chaldaean; cf., e.g., Ael. *NA* 7.8, *DS* 57.419 (with comm.).

words make this a sign that bridges the usual Hesiodic signs with those of *DS*.<sup>15</sup>

Demokritos (5th cent. BC). Ancient testimony is quite clear that the presocratic Demokritos was interested in and wrote on weather prediction: *ferunt Democritum, qui primum intellexit ostenditque caeli cum terris societatem*, ...<sup>16</sup> Modern scholarship, on the other hand, is almost as certain that all such testimony is either altogether mistaken or that these testimonia are to be assigned to Bolos of Mendes (Egypt) who supposedly went under the name Demokritos.<sup>17</sup> Bolos was said by Columella 7.5.17 to have produced a work, *Cheirokmeta*, under the name Demokritos.<sup>18</sup> Whatever the source of this confusion—intentional fraud on Bolos’ part (Columella), Bolos Demokritos’ double name being shortened to equal that of the presocratic (Wellmann), or Βῶλος Δημοκριτεῖος being misunderstood (Kroll)<sup>19</sup>—what may have been some few mistakes by ancients were taken by moderns to taint all ancient testimony connecting the presocratic Demokritos with weather. Most of the relevant testimony will be collected by W. Leszl (ch. 15 A, “Contributi all’astronomia descrittiva e di previsione”), to which the following can be added:

*Geoponika* 1.5.3 Δημόκριτος δὲ καὶ Ἀπουλήϊός φασι, τοιοῦτον χρὴ προσδοκᾶν ἔσσεσθαι τὸν χειμῶνα, ὅποία ἔσται ἡ ἡμέρα τῆς ἐορτῆς ἦν οἱ Ῥωμαῖοι Βροῦμα καλοῦσι, τουτέστιν ἡ τετάρτη εἰκάς τοῦ Δίου

<sup>15</sup> Note too that immediately before this passage there occurs the only place in Hesiod that actually suggest that weather is variable from day to day: ἄλλοτε δ’ ἄλλοιος Ζηνὸς νόος αἰγιόχοιο, | ἄργαλέος δ’ ἄνδρεσσι καταθνητοῖσι νοῆσαι.

<sup>16</sup> Pliny *NH* 18.273 (DK 68 A 17).

<sup>17</sup> What follows is argued at greater length in Sider (see above, n. 13), who wrote in ignorance of R. Laurenti, “La questione Bolo-Democrito,” in *L’Atomo fra scienza e letteratura*, Università di Genova, Facoltà di Lettere (1985) 55–74. See also Böker 1619 f., who argues for Demokritos having prepared a parapegma. Maass *GGA* (1893) 624–642 and Regenbogen, “Theophrastos,” *RE* Supplb. 7 (1950) 1414 argue that Demokritos was an important source for *DS*; see below.

<sup>18</sup> Col. 7.5.12 (= Dem. DK 68 B 300.3) *Bolos ... cuius ... Χειρόκμητα sub nomine Democriti falso produntur*. *Cheirokmeta* are “hand/man-made” medicines, as opposed to herbals. (For a defense of Demokritos’ having written on medical matters, whether or not in a separate work dedicated to the subject, see Guthrie, *Hist. Gk. Philos.* 2.469). Souda calls him Βῶλος Δημόκριτος φιλόσοφος, and both Vitruvius (9 praef. 14) and Pliny (*NH* 24.160) mention the *Chirocmeta* as a work of (simply) Demokritos. It is worth pointing out that Columella, who knew of Bolos, thought that the Demokritos who wrote on rustic/georgic matters (which could include weather lore) was the presocratic: 1 praef. 32, 3.125, 6.2.8, 8.8.7, 9.14.6, 11.3.2–3, 11.3.61.

<sup>19</sup> M. Wellmann, “Bolos,” *RE* 3 (1899) 676 f., W. Kroll, “Bolos und Demokritos,” *Hermes* 69 (1934) 228–232.

μηνὸς ἦτοι Νοεμβρίου.<sup>20</sup> 1.12.5 ὁ δὲ Δ. λέγει τὸν οἶνον χρηστὸν καὶ παράμονον<sup>21</sup> εἶναι, εὐθετον δὲ εἶναι τὸ ἔτος<sup>22</sup> πρὸς μόνην ἀμπέλων φυτείαν. 11 ὁ δὲ Δ. φησιν ἐν τούτῳ τῷ ἔτει χάλαζαν πολλήν γίνεσθαι καὶ χιόνας. 17 Δ. δέ φησι χαλάζης γίνεσθαι βλάβην [sc. περὶ τὸ φθινόπωρον]. 19 Δ. δέ φησιν, ἐν τῷ φθινοπώρῳ ἐκζέματα γίνεσθαι περὶ τὰ στόματα, διὸ χρή πρὸς τὸ ἔαρ λαχάνων ἄπτεσθαι, κοιλίαν τε λύειν, καὶ μάλιστα τοὺς νέους, ἀκράτῳ δὲ χρῆσθαι. 28 Δ. δέ φησιν ἐν τούτῳ τῷ ἔτει (sc. θέρει) μήτε ποταμοὺς ἔσεσθαι<sup>23</sup> μεγάλους μήτε χάλαζαν πολλήν· τὸ δὲ φθινόπωρον ἔνυδρον εἶναι. 29 Δ. δέ φησι ποταμοὺς μεγάλους ἔσεσθαι, καὶ νόσους περὶ τὸ φθινόπωρον. 40 Δ. δέ φησι τὴν ἄμπελον καὶ τὴν ἐλαίαν εὐφορήσειν.

Pliny *NH* 18.341 *tradunt eundem Democritum metente fratre eius Damaso ardentissimo aestu orasse ut reliquae segeti parceret raperetque desecta sub tectum, paucis mox horis saevo imbre vaticinatione adprobata*; Clem. *Strom.* 6.3.32 (2.446.28 St.) Δ. δὲ ἐκ τῆς τῶν μεταρσίων παρατηρήσεως πολλὰ προλέγων Σοφία ἐπωνομάσθη, ὑποδεξαμένου γοῦν αὐτὸν φιλοφρόνως Δαμάσου τοῦ ἀδελφοῦ τεκμηράμενος ἔκ τινων ἀστέρων πολὺν ἐσόμενον προεῖπεν ὄμβρον, οἱ μὲν οὖν πεισθέντες αὐτῷ συνεῖλον τοὺς καρποὺς (καὶ γὰρ ὥρα θέρους ἐν ταῖς ἄλωσιν ἔτι ἦσαν), οἱ δὲ ἄλλοι πάντα ἀπώλεσαν ἀδοκίτου καὶ πολλοῦ καταρρήξαντος ὄμβρου. (And see the commentary on *DS* 16.106 κόραξ.)

Demokritos, it would seem, wrote on ways to predict weather (i) over the course of a typical year (in the manner of Hesiod), also attempting (ii) to assess the course of the current season or the next one and (iii) to predict the weather as it would develop in the next few hours and days.<sup>24</sup> It is with predictions of the second and third sort that later

<sup>20</sup> Cf. Pliny *NH* 18.231 *Democritus talem futuram hiemem arbitratur qualis fuerit brumae dies et circa eum terni, item solstitio aestatem*.

<sup>21</sup> I.e., it improves with age; cf. Athen. 1.30e οἶνον πρὸς παραμονὴν ἐπιτῆδειον.

<sup>22</sup> In the literature on weather signs, ἔτος often seems to have the meaning “season,” although this is not recognized by LSJ. Cf. Hipp. *Aer.* 10 ὁκοῖόν τι μέλλει ἔσεσθαι τὸ ἔτος, εἴτε νοσηρὸν εἴτε ὑγιερὸν, *DS* 25.179 f. καὶ ὅλως τὸ ἔτος τὸ βόρειον τοῦ νοτίου κρεῖττον ἐστί καὶ ὑγιεινότερον, where in both passages it is clear from general context, as well as from the unstated awareness that it is impossible to predict the weather a year in advance, and that therefore seasons are meant. See further comm. ad 25.174 f. τὸ ἔτος—κρεῖττον.

<sup>23</sup> The future infinitives in 17, 29, and 40 no doubt reflect Demokritos’ original tense. Probably the instances of εἶναι and γίνεσθαι elsewhere in these passages also reflect futures. The original formula may be such as is found in *Geoponika* 1.5.3 τοιοῦτον χρή προσδοκᾶν ἔσεσθαι ... (given in full above).

<sup>24</sup> See Sider, “Demokritos” (above, n. 13) 297–300, for the possible disposition of these weather observations in the works of Democritus.

weather literature was concerned; and far less with the second than with the third, the signs of immediate weather. For those of the second sort in *DS*, note, for example, 34.240–2 “If etesian winds blow for a long time and there is a windy autumn, the winter will be windless. But if the opposite occurs, the winter will turn out opposite as well,” 40.293–5 “if many jelly fish appear in the sea this is a sign of a stormy season.”<sup>25</sup>

*Parapegmata*.<sup>26</sup> Hesiod wrote for the farmer who would need but few seasonal markers. With the development of written calendars and then in the fifth century a scientific prose literature (and perhaps we should add with the rise of urban populations accustomed to reading public announcements),<sup>27</sup> it was natural that long-term predictions, extended to cover every day of the year, would be displayed in agorai throughout Greece. In brief, every day of the solar year was designated in an easily understood way and given a general indication of local weather and perhaps of heavenly activity (e.g., morning setting of Pleiades). *Alongside* (παρά) each day was a hole, with a peg (a good English word to use in this context) being *stuck* in that day’s hole; hence παρά-πηγμα.<sup>28</sup> Attempts were made vastly to improve on Hesiod, in order to correlate, as in a modern farmer’s almanac, every day of the year with its expected weather, its ἐπισημασίαι, where this term indicates weather *concurrent* with the day indicated (e.g., in modern terms, “April 15th, rain”; in *DS*, σημαίνει, ἐπισημαίνει, and προσημαίνει are all used to

<sup>25</sup> 34.240–2 ἔάν ἐτησίαι πολλὸν χρόνον πνεύσωσι καὶ μετόπωρον γένηται ἀνεμῶδες, ὁ χειμὼν νήνεμος γίνεται, ἐάν δ’ ἐναντίως καὶ ὁ χειμὼν ἐναντίος, 40.293–5 καὶ οἱ πλεύμονες οἱ θαλάττιοι ἐάν πολλοὶ φαίνωνται ἐν τῷ πελάγει χειμερινοῦ ἔτους σημείον. Other examples at cc. 25, 26, 27, 41, 44, 48, 49, 55, 56.

<sup>26</sup> It will be useful to include a short paragraph on this material, although as with Hesiod, its weather signs are of the annual sort. The standard work on *parapegmata*, A. Rehm, *Parapegmastudien, mit einem Anhang, Euktemon und das Buch De Signis*. Abh. d. Bay. Ak. d. Wiss., Philos.-hist. Abt. NF 19 (München 1941), has now been replaced by D. R. Lehoux, *Astrology, Weather, and Calendars in the Ancient World*, Cambridge 2007. Cf. also O. Neugebauer, *A History of Ancient Mathematical Astronomy* (Berlin 1975) 1.587–589. For a comprehensive literary example, covering the entire year and citing earlier compilers, see Ptolemy’s *Phaseis* (vol. 2.14–65 Heiberg). Cf. Rehm, “Episemasiai,” *RE Suppl.* 7 (1940) 175–198; R. Hannah, “From orality to literacy: The case of the *parapegma*,” in J. Watson (ed.), *Speaking Volumes: Orality and Literacy in the Greek and Roman World* (Leiden 2001), 139–159; id. “Euktemon’s *parapegma*,” in C. J. Tuplin and T. E. Rihll (eds.), *Science and Mathematics in Ancient Greek Culture* (Oxford 2002) 112–132.

<sup>27</sup> On the relationship between *parapegmata* and literacy, cf. R. Hannah, “From orality to literacy” (see above, n. 26).

<sup>28</sup> See further Geminus *Eisagoge* 17, which is the fullest ancient treatment. Geminus spends much of his chapter, however, arguing that the heavenly signs are not the actual causes of the weather that follows.

indicate *forthcoming* weather). Since, as was mentioned above, Hesiodic weather prediction is distinct from that found in *DS* and most weather literature; and since the *parapegmata*, although individually designed to fit their respective locales, were extensions of Hesiod, they need not be treated in detail here, although *DS* does contain one sentence of a *parapegmatic* sort; see comm. on 23.157 f. ἐὰν μὴ—ἦ ἄνεμος. Names associated with *parapegmata*, and frequently named in our literary exempla (e.g., Vitruvius 9.6.3) were, from the fifth century, Demokritos (see previous section), Euktemon (see below), Meton (see comm. on *DS* 4.27 f. Μέτων); from the fourth century, Eudoxos (see below), Philippos of Opos, Kallippos (Böker 1621–23); from the third century, Konon, Dositheos, Metrodoros; and, from the second century, Hipparchos.<sup>29</sup> Remains of some inscriptional *parapegmata* are extant (cf. Rehm, *Parapegmastudien*) and literary versions (adapted to current, even Roman, calendars)<sup>30</sup> can be found in Geminus' *Parapegma*, Ptolemy's *Phaseis* and Columella 11.2.<sup>31</sup> Only one sign in *DS* may be said to be *parapegmatic*: 30.206 f. ἡ πέμπτη καὶ δεκάτη ἀπὸ τροπῶν τῶν χειμερινῶν ὡς τὰ πολλὰ νότιος, which Rehm *Parapegmastudien* 129 ff., perhaps rightly, thinks derives from Euktemon. This observation of *DS*, however, occurs in the middle of a passage concerned with the alternation between north and south winds, just as in [Arist.] *Probl.* 26, so that this may be reflecting a topic familiar to the Lyceum and hence only indirectly derived from *parapegmata* and/or Euktemon. Cf. *Probl.* 26.12 (941b13–14) ἔστι δὲ καὶ ἡ μετὰ τὰς χειμερινὰς τροπὰς πεντεκαίδεκάτη νότιος. Therefore, Böhme's theory that a *parapegma* was part of the original *DS* (7 f.), although it may in fact be true, is not compelling. Note that Rehm *Parapegmastudien* has argued that Euktemon is the author of *DS*; see further below, on authorship of *DS*.

<sup>29</sup> For a more detailed and more comprehensive survey of names associated with *parapegmata*, cf. Lehoux, *Parapegmata, or Astrology, Weather, and Calendars in the Ancient World*. Diss. Toronto 2000, 20–22.

<sup>30</sup> The essence of *parapegmata* is the association of particular weather to particular days of the solar year. How these days are identified changes in the course of time. At first, as noted above, it would be in the form of solstice/equinox + number of days; then Dionysian (see immediately below) month (derived from zodiacal sign) + number (the fifth day of Aries, say); next, in the Hellenistic period, Egyptian calendrical months were used; and then Roman months. And occasionally more than one system was given. (The division of the zodiac into signs is credited to Kleostratos in, probably, the late sixth century; cf. comm. ad *DS* 4.26 Κλεόστρατος; but the systematic use of them to identify the days of the year was developed by Dionysios in 285 BC; cf. A. E. Samuel, *Greek and Roman Chronology* [Munich 1972] 39 f., 50, 52).

<sup>31</sup> For an example of *parapegmata*, see Lehoux, *Parapegmata*.

Aristotle, Σημεῖα χειμώνων α' (D.L. 5.26, title no. 112;<sup>32</sup> Σημασίαι χειμώνων, Hesysch.; for the designation Περί σημείων, see below). See further Gemin. *Eisagoge* 17.49, who after a summary of the short-term weather signs used by Aratos says τούτοις δὲ τοῖς σημείοις καὶ Ἀριστοτέλης ὁ φιλόσοφος κέχρηται καὶ Εὐδόξος καὶ ἕτεροι πλείονες τῶν ἀστρολόγων (Arist. fr. 364 Gigon = Eudoxos fr. 139 Lasserre).<sup>33</sup> Note also Seneca *QN* 7.28.1 *Aristoteles ait cometas significare tempestatem et ventorum intemperantiam atque imbrium* (a passage missed by Gigon).<sup>34</sup> Two sentences from this work are quoted by Schol. in Arat. 1095 (see comm. on *DS* 17 ὄρνιθες οἱ βιοτεύουσιν ἐν νήσῳ) = Arist. fr. 365 Gigon. An even longer (and for our purposes extremely valuable) passage is paraphrased by Aelian *NA* 7.7 = Arist. fr. 270.21, almost every clause of which is quoted as appropriate throughout the commentary (see below and the index locorum). Although Gigon keeps all of his selection from Aelian (fr. 270) among the fragments Περί ζώων (pp. 420–492), we regard *NA* 7.7, beginning Ἀριστοτέλους ἀκούω λέγοντος ὅτι κτλ., as deriving from his work on signs, where they would have appeared within smaller compass and hence would have been easier for Aelian to mine. More specifically, Aristotle may, like some of the Byzantine collections described below, have arranged his work by sign rather than, like *DS*, by result. A section like this devoted entirely to bird signs could have been easily mined by Aelian. It is true that some of the signs in Aelian's chapter portend events other than storms, and so would seem to go beyond the range indicated by D.L.'s title, but there is no evidence that any compiler of weather signs limited himself to only one outcome (excluding, that is, wind, rain, fair weather, etc.; even the more fully titled *DS* manages to get in signs for snow and hurricanes, which are not part of the title). There is no reason, furthermore, to believe that Aelian stuck close to Aristotle's actual words;<sup>35</sup> in particular, there is good rea-

<sup>32</sup> P. Moraux, *Les listes anciennes des ouvrages d'Aristote* (Louvain 1951) 113, 186 thinks that this title was mistakenly listed with mathematical works, but Diogenes' list at this point is not so neatly organized: items 109–115 are *Physiognomonikon*, *Iatrika*, *Monad*, *Signs of Storms*, *Astronomikon*, *Optikon*, *Kinesis*.

<sup>33</sup> Cronin "Authorship" 308 is right to raise the possibility that Geminus is here thinking only of isolated weather signs scattered through *Mete.* and *HA* (see below), but this seems unlikely.

<sup>34</sup> As noted by Cronin 309, the Senecan fragment is at variance with what Aristotle says at *Mete.* 344b19–20, that comets σημαίνουσι γιγνόμενοι πλείους πνεύματα καὶ αὐχμούς. And since Seneca's statement agrees with *DS* 34.245–7, it is possible that Seneca took Aristotle to be the author of *DS*, or that Aristotle changed his mind from one work (Περί σημείων) to the next (*Mete.*).

<sup>35</sup> Cf. O. Gigon, *Aristotelis Opera*, vol. 3, *Librorum deperditorum fragmenta* (Berlin 1987)

son to believe that he stripped Aristotle's original of the scientific reasons for believing in each of the signs given. Nor is there much reason to believe that Aelian is here actually citing *DS* in the mistaken belief that he is reading a work of Aristotle.<sup>36</sup> Aelian 7.7 contains signs not in *DS* and he places signs that are found in *DS* in 7.8, which he seems to reserve for signs found elsewhere.

Another possible explanation for the testimony for Aristotle's having written such a work is that later sources were in fact referring to *DS*. Such is the view, e.g., of A. F. Schofield, the editor of the Loeb Aelian *On the Characteristics of Animals*, who, when Aelian says ὡς ἐκεῖνος λέγει (by which Aelian means Aristotle), glosses this in his facing translation with "[Thphr. Sig. 16]." It may well be the case that Aristotle never wrote such a work, but the fact that Aelian's chapter so often closely agrees with *DS* is not proof of this, as it is in the nature of ancient technical treatises to borrow freely from predecessors, so that, whatever the mutual affiliations among the many ancient works on weather, any work of Aristotle on this subject would almost certainly share signs with the others.

For Aristotle's interest in weather signs in his extant works (ignoring *Problemata*'s many examples; see below), cf., e.g., (i) *Mete.* 372b15–33: a complete halo is a sign of rain, broken it is a sign of wind, faded it is a sign of fair weather; for each sign a reason is given which in turn are embedded in a wider context of the nature of halos. See comm. on 22, where this passage is quoted at length. (ii) 372b23–28: mock suns as signs of rain (and the reason for this); cf. comm. ad 22. (iii) *HA* 575b17–19: cows coupling signal rain (no cause given); cf. comm. ad 40. (iv) 614b20–21: cranes descending signal a storm (because they can see over the horizon); cf. comm. ad 38.

The codd. of Ἀνέμων θέσεις καὶ προσηγοῖται identify it as having come ἐκ τῶν Ἀριστοτέλους Περὶ σημείων. The ἐκ is ambiguous; it could mean that *De Situ* formed a discrete unit within the larger work, or, more likely, that the mechanically presented information about the directions and (some) alternate names were abstracted from various places in Aristotle's *Peri semeion* and rewritten. The text, newly edited by

420, "Diejenigen Aelians nennen nur den Namen des Aristoteles und sind in der Regel stilistisch stark überarbeitet." Böhme 40 f., however, thinks that when Aelian says ὡς ὁ αὐτὸς Ἀριστοτέλης λέγει and ὡς ἐκεῖνος λέγει, "pro certo habeamus etiam illa paucis mutatis Aristotelis esse," but all this may mean is that he is here following closely his source, which may or may not be close to Aristotle's own language.

<sup>36</sup> So, e.g., A. F. Schofield, the editor of the Loeb Aelian, p. 103.

Victor D'Avella, is given below in the appendix. See comm. ad c. 35.249 στάσεις.

Book 26 of the Peripatetic *Problemata* contains a number of weather signs, some of them paralleled in *DS*, although they are not gathered in one place within the book. Note especially *Probl.* 26.19 with *DS* 35.254, 23 with 13.83, 26 with 20.135, 34 with 26.177, 61 with 29.199 f. There is, though, insufficient verbal parallel to maintain that *Problemata* derives directly from *DS*, as was argued by Rehm, *Parapegmastudien* 131, crediting C. von Prantl, "Über die Probleme des Aristoteles," *Bayerische Akademie der Wissenschaften (München)*, Philosophisch-philologische Klasse 6 (1852) 375. Nonetheless, the common Peripatetic origin of Aristotle, Theophrastos, *Problemata* and *DS* suggests that all explanations found in *Problemata* originated in Aristotle's and perhaps Theophrastos' *Περὶ σημείων* as well. They will accordingly be given in full in the commentary.

Theophrastos, *Περὶ σημείων* (D.L. 5.45); cf. Proklos in *Plat. Tim.* 40cd (=Theophrastos fr. 194 FHSG) θαυμασιωτάτην δὲ εἶναι φησιν ὁ Θεόφραστος ἐν τοῖς κατ' αὐτὸν χρόνοις τὴν τῶν Χαλδαίων περὶ ταῦτα θεωρίαν, τὰ τε ἄλλα προλέγουσαν καὶ τοὺς βίους ἐκαστῶν καὶ τοὺς θανάτους, καὶ οὐ τὰ κοινὰ μόνον, οἷον χειμῶνας καὶ εὐδίας, ὥσπερ καὶ τὸν ἀστέρα τοῦ Ἑρμοῦ χειμῶνος μὲν ἐκφανῇ γενόμενον ψύχῃ σημαίνειν, καύματα δὲ θέρους εἰς ἐκείνους ἀναπέμπειν· πάντα δ' οὖν αὐτοὺς καὶ τὰ ἴδια καὶ τὰ κοινὰ προγινώσκειν ἀπὸ τῶν οὐρανίων ἐν τῇ *Περὶ σημείων* βίβλῳ φησὶν ἐκεῖνος. There is nothing in *DS* on the Chaldaeans, nor on any astrological influence of the stars on men. The reference to stars, moreover, is more suggestive of parapegmic material, which affect κοινὰ if not ἴδια. Note, though, *DS* 46.339 f. "If Mercury is visible in winter it signals cold, if in summer it signals heat," which strongly suggests that other passages (how many?) appeared in both works. It is noteworthy that, although Theophrastos in his extant (and lengthy) works on plants quite naturally refers occasionally to the causal relationship between weather and plants,<sup>37</sup> he nowhere looks to plants (or anything else) for signs of impending weather.<sup>38</sup>

<sup>37</sup> E.g., *HP* 3.8.5, the only oaks struck by lightning are scrub oak and sea-bark oak. Note also fr. 400a, mushrooms produced by thunderstorms. *CP* 5.12–14 discusses the deadly effect that weather can have on plants.

<sup>38</sup> See further R. Sharples, "Some observations on the secondary tradition of Theophrastos' *Opuscula*," in Fortenbaugh and Sharples (1988) 45–47. See also Sharples' commentary on fr. 194 in R. Sharples, *Theophrastus of Ephesus. Commentary*, 3.1, pp. 161–3.



Eudoxos of Knidos (4th cent. BC). Cf. Gemin. *Eisagoge* 17.47–49 (Eudoxos fr. 139 Lasserre) (Aratos) λαμβάνει γὰρ τὰς προγνώσεις ἀπὸ τῆς τοῦ ἡλίου ἀνατολῆς καὶ δύσεως, καὶ ἀπὸ τῶν τῆς σελήνης ἀνατολῶν καὶ δύσεων, καὶ ἀπὸ τῆς ἄλλω τῆς γινομένης περὶ τὴν σελήνην, καὶ ἀπὸ τῶν διαϊσόντων ἀστέρων, καὶ ἀπὸ τῶν ἀλόγων ζώων. ... 49 τούτοις δὲ τοῖς σημείοις καὶ Ἀριστοτέλης ὁ φιλόσοφος [fr. 364 Gigon] κέχρηται καὶ Εὐδοξος. Similarly Joh. Diacon. in *Hes. Theog. alleg.* p. 571 Gaisford κατὰ διαφόρους ἐπιτολάς καὶ δύνσεις ἄλλων καὶ ἄλλων ἄστρον, καὶ ἐκ διαφορῶν μερῶν τοῦ παντὸς οἱ ἄνεμοι πνέουσιν, ὡς Ἀριστοτέλης τε δηλοῖ ἐν τῷ δευτέρῳ τῶν Μετεώρων (351b30) καὶ Ἄρατος ὁ ποιητὴς καὶ Εὐδοξος (fr. 139). These are important testimonia, as they credit Eudoxos with προγνώσεις derived from sun, moon, halos, shooting stars, and animals, of wind and rain, i.e., all short-term weather signs, and all of which sort are found in *DS*. Almost as important is Sext. Emp. *Adv. math.* 5.2, where Eudoxos (fr. 141) and Hipparchos are credited with a προρρητικὴ δύναμις that derives from their study of astronomy, here defined as a τήρησις ... ἐπὶ φαινομένοις ὡς γεωργία καὶ κυβερνητική, ἃφ' ἧς ἔστιν αὐχμούς τε καὶ ἐπομβρίας λοιμούς τε καὶ σεισμούς καὶ ἄλλας τοιoutώδεις τοῦ περιέχοντος μεταβολὰς προθεσπίζειν.<sup>39</sup> If this is true, it could explain why Eudoxos alone is given as the source for Aratos by ancient authors:<sup>40</sup> Aratos would have found in Eudoxos his source for both parts of his poem, the description of the heavens and of the Diosemaia.<sup>41</sup> Indeed, *Vita Arati* 3 (pp. 16.28–17.21 Martin) makes it clear that Aratos did not go beyond Eudoxos in composing the *Phainomena*.<sup>42</sup> And since Aratos is close in

<sup>39</sup> Eudoxos fr. 141 Lasserre. Böker 1621 argues that, since Hipparchos is dependent on Eudoxos for his calendrical data, here too Sextus' comments should apply exclusively (*allein*) to Eudoxos. This may be an overstatement, but "primarily" can probably be substituted for "exclusively." Plagues and earthquakes may be predicted from animal signs more readily than from astronomy, which suggests that Sextus has misread an intermediate source as to the nature of Eudoxos' work. On the other hand, the earthquake experts mentioned by Pausanias 7.24.7–11 (οἱ φροντίσαντες and their students) read only meteorological signs in addition to distinguishing among different kinds of earth tremors; see Gilbert 319–321.

<sup>40</sup> For his content, that is; Kallimachos and others regard Aratos' poetic model as Hesiod. Cf. Kall. *Epigram* 27.1 Ἡσιόδου τό τ' αἶσιμα καὶ ὁ τρόπος, on which see W. Ludwig, "Die Phainomena Arats als hellenistische Dichtung," *Hermes* 91 (1963) 425–448; R. L. Hunter, "Written in the stars: Poetry and philosophy in the *Phainomena* of Aratus," *Arachnion* 2 (1995), <http://www.cisi.unito.it/arachne/num2/hunter.html>.

<sup>41</sup> This is in fact Böhme's argument for Eudoxan authorship of *DS* (cf., e.g., Böhme 81–83).

<sup>42</sup> Although it does so in an insulting way, quoting Hipparchos and some unnamed individuals who claimed that the unmathematical Aratos was incapable of going beyond

many instances to *DS*, Eudoxos either is its author or he drew very heavily from it or something very close to it. The common statement, therefore, that Aratos' section of weather signs derives from *DS* may falsely suggest that he had two major sources rather than, as seems likely, one work under Eudoxos' name. (See further below, on Aristotle.)

Bolos of Mendes (3rd cent. BC). Cf. Souda (s.v. Βῶλος Μενδήσιος Πυθαγόρειος): Περὶ σημείων τῶν ἐξ ἡλίου καὶ σελήνης καὶ Ἄρκτου καὶ λύχνου καὶ ἵριδος. All of which signs but *Arktos* (lg. Ἄρκτουρου?) are used as short-term weather signs in the extant *De Signis*. Bolos was confused with Demokritos (see above).<sup>43</sup>

P. Vindob. gr. 1 (3rd–2nd cent. BC). This fragmentary papyrus clearly contains, i.a., weather signs of the sort found in *DS*. Some are dependent on the phases of the moon, as in *DS* cc. 5–6. The arrangement is by sign: An entire section is given over to the Manger, [τὰ ἐκ τοῦ Φατνίου σημ[εῖα]; cf. *DS* 23.156, 43.314 f., 51.370 f. Others are [διαττόντων] σημεία, [θαλάσσης] σημεία, and [ἡλίου] σημεία.

Cf. O. Neugebauer, "Astronomische Papyri aus Wiener Sammlungen. II. Über griechische Wetterzeichen und Schattentafeln. Institut für österr. Geschichtsforschung, Pap. graec. Nr. 1," *Sitzungsberichte der Österreichischen Akademie der Wissenschaften*, Philosophisch-historische Klasse 240, Abh. 2 (1962) Vienna, 29–44; Neugebauer rearranges and reedits C. Wessely, "Bruchstücke einer antiken Schrift über Wetterzeichen," *Sitzungsberichte der Wiener Akademie der Wissenschaften*, Philologisch-historische Klasse 142, Abh. 1 (1900).

Eudoxos. It is clear then that the point of this story is directed against the first part of Aratos' poem. None the less, the force of the anecdote would be seriously weakened if not destroyed had Aratos used any source other than Eudoxos. W. Kroll, "Lehrgedicht," *RE* 12 (1925) 1849, should be given credit for allowing for the possibility that Eudoxos was Aratos' source for his weather signs: "Es ist keineswegs ausgeschlossen, dass auch der zweite Teil, die sog. Diosemeia, eine Bearbeitung des Eudoxos sind."

<sup>43</sup> On Bolos, cf. Wellmann (see above, n. 19.) *RE* Supplb. 1 (1903) 255; "Die Georgika des Demokritos," *Abhandlungen der Preussischen Akademie der Wissenschaften*, Philosophisch-historische Klasse (1921.4) Berlin; "Die Φυσικά des Bolos Demokritos und der Magier Anaxilaos von Larissa," *Abhandlungen der Preussischen Akademie der Wissenschaften*, Philosophisch-historische Klasse, (1928.7) Berlin; J. Waszink, "Bolos," *Reallexikon für Antike und Christentum*, Stuttgart, 2 (1954) 502–508; P. M. Fraser, *Ptolemaic Alexandria* (Oxford 1972) 1, 440–444; J. P. Hershbell, "Democritus and the beginnings of Greek alchemy," *Ambix* 34 (1987) 5–20; J. Salem, *La légende de Démocrite* (Paris 1996) 118–128.

Aratos 733–1154. Only one source for Aratos was known by the ancients, i.e., Eudoxos: Hipparchos, e.g., in *Arati et Eudoxi Phaenomena Comment.* mentions only Eudoxos (see above, on Eudoxos). It is true that Hipparchos' commentary stops short of Aratos' weather signs, but his statement that Aratos based his poem on Eudoxos' *Phainomena* (1.2.2 πρὸς τὰ Φαινόμενα δὲ τὴν ποίησιν συνέταξεν) seems to exclude any other source for Aratos, unless one still holds to the view that the weather signs are not original to Aratos' poem.<sup>44</sup> Cf. *Vita Arati* 3 pp. 15.33–16.2 Martin, which has him as an intimate of Zeno Stoicus, but on the subject of the *Phainomena* the *Vita* says (16.24–17.6) τὴν δὲ τῶν Φαινομένων υπόθεσιν παρέβαλεν αὐτῷ ὁ Ἀντίγονος (sc. of Pella) δοὺς τὸ Εὐδόξου σύγγραμμα καὶ κελεύσας ἐπεσθαι αὐτῷ. ὅθεν τινὲς τῶν ἀπαλωτέρας προσερχομένων ταῖς ἐξηγήσεσιν ἔδοξαν μὴ μαθηματικὸν εἶναι τὸν Ἀρατον. ὑπέλαβον γὰρ μηδὲν ἕτερον τῶν Εὐδόξου Φαινομένων ποιήσαντα αὐτὸν εἰς τὸ σύγγραμμα θεῖναι. This anecdote all but explicitly excludes a second source. Cf. Cic. *De re publ.* 14. Since *DS* and Aratos agree in detail on many weather signs, it is impossible to exclude the possibility that Eudoxos' work on weather signs (whether or not a distinct work) contained signs very similar to when not exactly the same as *DS* and that he was the source for Aratos (as Aratos would himself have thought). That *DS* and Aratos are consistently close strongly suggests, but does not prove, either (i) that Eudoxos was not

<sup>44</sup> This seems most unlikely, though. The essential difference between the sections on star-lore and that on short-term weather statements (see above) is passed over as smoothly as possible, so that the transition at 758 from one to the other is barely noticed. Note that the section on the days of the month (733–739), which figures in *DS* and similar literature (cf., e.g., *DS* cc. 5, 6, 8), occurs before a resumptive section on the zodiac (740–757). Note too how the theme in this latter section of the need for sailors to recognize *all* signs (esp. 743 ἐκ Διὸς ἦδη πάντα πεφασμένα πάντοθι κεῖται) is continued in the beginning of the Diosemiai (esp. 758–760); and how 758 itself looks back as it begins the new section: τῷ κείνων πεπόνησο κτλ). Aratos' famous acrostic ΛΕΠΤΗ from 783 to 787 marks off a passage on the days of the month that hearken back to 733–739. Another argument for unity is the reference in the proem to farmers (7–9), who are barely mentioned in the first part of the poem (whereas sailors are often specified), but who are frequently named in the section on weather signs; cf. C. Fakas, *Der hellenistische Hesiod: Arats Phaenomena und die Tradition der antiken Lehrepik* (Wiesbaden 2001) c. III 3.3, "Das Landwirtschaftsthema." There was, nonetheless, an ancient belief that the Diosemiai formed either a separate book or a separate poem. For a treatment of this question, cf. W. Ludwig (see above, n. 40), M. Erren, *Die Phaenomena des Aratos von Soloi: Untersuchungen zum Sach- und Sinnverständnis* (Wiesbaden 1967) 227–233, and Martin's Budé 1.lxii f., all of whom argue for the Diosemiai's being an organic part of Aratos' original poem. P.Berol. 7503 + 7804 (*BKT V* i, p. 47), 1st–2nd cent. AD contained both astronomy and weather signs (vv. 642–55, 684–802, 855–83, 922–34), but of course one cannot rule out the possibility that at 758 it announced the end of one poem and the beginning of another.

interested in the causes that we assume to have been present in Aristotle's and Theophrastos' works on weather signs, or (ii) that his fuller text was stripped of its signs by Aratos.<sup>45</sup> (That Aratos does not follow the same order as *DS* where his signs are the same proves nothing; cf. Heeger 26.)<sup>46</sup>

Aratos was translated into Latin by Varro Atacinus (see below), Cicero, and Germanicus.

Although some scholars have argued that Aratos was the source for *DS*,<sup>47</sup> we think that a close look at two parallels between the two works rules out this line of descent:

(i) *DS* 12.80 f. (speaking of the moon) ἐὰν μὲν ἦ ἀργυρώδης εὐδίαν, εἰ δὲ πυρώδης ἄνεμον, ἐὰν δὲ ζοφώδης ὕδωρ σημαίνει is an unusually periodic sentence for this work, but the anomalous εἰ-clause between two that begin with ἐὰν suggests accretion over time, not one that was copied whole from any one source, let alone a poetic one. Aratos 802–804, on the other hand, reads like a poetic translation of the text of *DS*: πάντη γὰρ καθαρή κε μάλ' εὐδία τεκμήριοι, | πάντα δ' ἐρευθομένη δοκέειν ἀνέμοιο κελεύθους, | ἄλλοθι δ' ἄλλο μελαινομένη δοκέειν ὑετοῖο.

(ii) Both *DS* 17.110–12 ἐὰν τε κόρακες ἐὰν τε κολιοῖοι ἄνω πέτῳνται καὶ ἱερακίζουσιν ... ὕδωρ σημαίνουνσι and Arist. fr. 270.21 Gigon κολιοῖοι δὲ ἱερακίζοντες ... ὑετὸν δηλοῦσι describe the same sign with the same verb, ἱερακίζειν, which is very rare, appearing only in these two classical texts.<sup>48</sup> Its very meaning is obscure (see the comm. ad *DS* 17.111). Aratos 963–966, on the other hand, spells out the meaning (although he may only have guessed at it):

δὴ ποτε καὶ γενεαὶ κοράκων καὶ φῦλα κολιοῶν  
 ὕδατος ἐρχομένοιο Διὸς πάρα σῆμ' ἐγένοντο,  
 φαινόμενοι ἀγγελιδὰ καὶ ἰρήχεσσιν ὁμοῖον 965  
 φθελγῶμενοι.

<sup>45</sup> As the commentary will amply demonstrate, there is much overlapping between *DS* and Aratos, but the latter has ca. 20 signs not found in the former; cf. Kidd 22 f. for a list.

<sup>46</sup> Aratos at first arranges by sign and then by result; cf. Erren, *Die Phainomena*, 266–300, for the fullest analysis of Aratos' arrangement.

<sup>47</sup> Rose (see above, n. 12) 23 f.; W. Gemoll, *Untersuchungen über die Quellen, den Verfasser und die Abfassungszeit der Geoponica*. Berliner Studien für klassische Philologie und Archäologie, 1.1. Berlin 1883 [repr. Walluf bei Wiesbaden 1972.] 57. Böhme 25 f. easily destroys Rose's argument based on the supposed similar order of the two texts.

<sup>48</sup> It reappears in later (and derivative) weather literature: Anon. Laur. 11.22 and *CCAG* 8.1 p. 138.9.

This δις λεγόμενον forms a direct link between Aristotle and *DS*, even if there were intermediate texts. *DS* could never have come up with this verb from a reading of Aratos (although it still remains possible that *DS* postdates Aratos).

Poseidippos the epigrammatist (early 3rd cent. BC). The recently published papyrus of the late third century BC<sup>49</sup> contains four contiguous epigrams on weather signs at the beginning of the section entitled οἰωνοσκοπικά (21–24 Austin-Bastianini). Poseidippos seems to have taken pains to obtain his signs from other than the usual sources (as outlined in this section of the introduction); see D. Sider, “Poseidippos on Weather Signs and the Tradition of Didactic Poetry,” in K. Gutzwiller (ed.), *The New Posidippus: A Hellenistic Poetry Book* (Oxford 2005), 164–182.

Nigidius Figulus (1st cent. BC).<sup>50</sup> Nigidius Figulus’ writings on this subject may not have been part of a work dedicated to weather signs, at least not of the sort we see elsewhere. According to Aulus Gellius 7.6.10 (N.F. fr. 80 Swoboda) he wrote *De augurio privato*, which may have offered instruction in how to read the heavens not only for weather but also for omens of all sorts. Thus an elaborate βροντοσκοπία is credited to him by Joh. Lydus *De ostentis* pp. 57–83: a calendric arrangement, from June to May of what to expect on each day, ἐὼν βροντήση. Some apodoses are weather conditions of various sorts (e.g., great heat, cloudiness, rain), but many more are outcomes not in themselves meteorologic but dependent upon weather at least to some extent (e.g., disease, a good harvest, small fish catches), and some have no connection with the weather (e.g., civil discord, πόλεμοι καὶ μυρία κακά). Elsewhere, in his Τῶν ὀνείρων ἐπίσχεψις, he said that while generally to dream of lightning is an unfavorable sign, for some it foretells good fortune.<sup>51</sup>

On the other hand, some other statements attributed to Nigidius conform to standard weather predictions. Cf. Schol. in Germanicum 112 *si rubet* [sc. *luna*] *quasi aurum, ventos ostendit* (~*DS* 12.80 f. εἰ δὲ πυρὸς-

<sup>49</sup> G. Bastianini and C. Gallazzi, *Posidippo di Pella. Epigrammi* (P.Mil.Vogl. VIII 309). Milan 2000.

<sup>50</sup> Cf. Böhme 32 ff.; Heeger, 36 f. Fragments in A. Swoboda, *P. Nigidii Figuli operum reliqua* (1889). Cf. F. Kroll, “Nigidius (2),” *RE* 17 (1936) 200–212 (205 on *De Ventis*), A. Roehrig, *De P. Nigidio Figulo capita duo* (Diss. Leipzig 1887) 56 ff.

<sup>51</sup> Lydus *De Ostent.* 45, pp. 95.15–96.3 Wachsmuth.

δης [sc. σελήνῃ] ἄνεμον); *fit enim ventus ex aeris densitate, densitate obducta sol et luna rubescunt. item si cornua eius oblecta fuerint nebula, tempestas futura est.* This causal explanation, however, is foreign to *DS*. Does it derive from an Aristotelian or Theophrastean original, or is it due to Nigidius Figulus himself? (See below on causation in *DS*.)

Varro Reatinus (1st cent. BC). As Heeger 35 f. shows, the fragments attesting to Varro's interest in weather signs are not entirely consistent with *DS* and Aratos. Pliny *NH* 18.348 f., the most extensive, contains an extensive passage from Varro on signs provided by the various phases and attendant colors, halos, etc. of the moon, many of which appear in *DS* (see index locorum). (These came from a source other than his *Res Rusticae*, which ignores weather signs.): *si quarto die luna erit directa, magnam tempestatem in mari praesagiet, nisi si coronam circa se habebit et eam sinceram, quoniam illo modo non ante plenam lunam hiematurum ostendit. si plenilunio per dimidium pura erit, dies serenosis significabit; si rutila, ventos; nigrescens imbres; 349 si caligo orbisve nubium [Mayhoff; orbis nubem codd.] incluserit, ventos qua se ruperit; si gemini orbes cinxerint, maiorem tempestatem, et magis, si tres erunt aut nigri, interrupti atque distracti. nascens luna si cornu superiore obatrato surget, pluvias decrescens dabit, si inferiore, ante plenilunium, si in media nigritia illa fuerit, imbrem in plenilunio. si plena circa se habebit orbem, ex qua parte is maxime splendet ex ea ventum ostendet, si in ortu cornua crassiora fuerint, horridam tempestatem. si ante quartam non apparuerit vento favonio flante, hiemalis toto mense erit, si xvi vehementius flammea apparuerit, asperas tempestates praesagiet.* This is far fuller than the (dispersed) lunar signs found in *DS* or Aratos. It also differs from them in such a way to suggest the independence of Varro or his source. Compare in particular *DS* 27.185 f. "when a north wind blows, westerlies are accustomed to follow and the month continues to be stormy" with Varro ap. Pliny *NH* 18.348 "If when there is a west wind blowing the moon does not make an appearance before her fourth day, she will be accompanied by wintry weather for the whole month," where what is sign in the latter is a result in the former (see the commentary).

Isid. *DNR* 38.2 is consistent with *DS* 21.140 f. and Aratos but (as cited at any rate) contains less detail (see comm. ad loc.): *item Varro dicit signum esse tempestatis dum de parte aquilonis fulget et dum de parte euri intonat.* Id. 38.4 is close to *DS* 26.179: *sol si exorians concavus videtur* (ἐὰν κοῖλος φαίνεται ὁ ἥλιος<sup>52</sup>), *ita ut e medio fulgeat et radios faciat*

<sup>52</sup> Sc. ἀνατέλλων, as is clear from the preceding sentence.

*partim ad aquilonem, partim ad austrum, tempestatem humidam et verno-sam futuram innuit* (ἐὰν αἱ ἀκτῖνες αἱ μὲν πρὸς βορρᾶν αἱ δὲ πρὸς νότον σχίζονται τούτου μέσου ὄντος κατ' ὄρθρον κοινὸν ὕδατος καὶ ἀνέμου σημεῖόν ἐστιν). Nonius Marcellus 1.66 *ventique frigido se ab axe eruperant phrenetici, septentrionum filii, secum ferentes tegulas, ramos, syrus*. That Vergil read and used him is shown below.<sup>53</sup>

Cf. Vegetius 4.41.6 *aliquanta ab avibus, aliquanta significantur a piscibus, quae Vergilius in Georgicis divino paene comprehendit ingenio et Varro in libris navalibus diligenter excoluit*, which suggests that just as Hesiod dedicated his book to farmers Varro aimed his toward sailors. Although Vergil has no signs from fish, note that he, unusually, mentions sailors (along with *rura*) at *G.* 1.372 f. *omnis navita ponto | umida vela legit*, in a passage that also has a Varronian parallel; see comm. on *DS* 21.140 f. See further Böhme 30 ff., Heeger 35 f.

Varro Atacinus (1st cent. BC), *Ephemeris*.<sup>54</sup> Two fragments derive from this work: 21 Morel = 13 Courtney *nubes si ut vellera lanae | constabunt* (cf. ad *DS* 13.87); and 22 M. = 14 C.:

*tum liceat pelagi volucres tardaeque paludis  
cernere inexplatas studio certare lavandi  
et velut insolitum pennis infundere rorem;  
aut arguta lacus circumvolitavit hirundo* [= V. *G.* 1.377]<sup>55</sup>  
\* \* \* \* \*

*et bos suspiciens caelum (mirabile visu) 5  
naribus aerium patulis decerpsit odorem,  
nec tenuis formica cavis non evehit ova.*

Cf. comm. ad *DS* 15.97. Varro translated Aratos, as is shown clearly in fr. 22, which contains signs from birds washing themselves, swallows flying over a lake, a cow looking up at and sniffing at the sky, and ants carrying out their pupae—the very signs in the very order found in Aratos 942–945 (birds washing and swallows) and 954–957 (cows and ants). That Varro was read and copied in turn by Vergil (who also read Aratos)

<sup>53</sup> For the fragments of Varro, along with commentary, cf. E. Courtney, *The Fragmentary Latin Poets* (Oxford 1993) 235–253. And for Varro in general, see F. Lenz, “P. Terentius (88) Varro,” *RE* 5 (1934) 692–714.

<sup>54</sup> Cf. Brev. Expos. Verg. Georg. 1.397 *Varro in Ephemeride* [Bergk; *epimenide, epimedine* codd.], introducing fr. 21 Morel = fr. 13 Courtney.

<sup>55</sup> H. D. Jocelyn, “Ancient scholarship and Virgil’s use of Republican Latin poetry,” *CQ* 15 (1965) 140, unconvincingly argues that this line was originally Vergil’s, which was then inserted into the text of Varro; cf. Courtney ad Varronis loc.

is shown by the overt imitation of Varro Atac. fr. 22.1–3 *cernere inexpectas studio certare lavandi* by Verg. *G.* 1.387 *et studio incassum videas gestire lavandi*.<sup>56</sup>

Vergil *Georgics* 1.351–463 (after 204–350, on the annual signs). Although it is impossible to read the *Georgics* without thinking of Hesiod's *Works and Days*, there are in fact very few direct borrowings, mostly in Book 1,<sup>57</sup> and hence much that is new, the passage on weather signs being but one such section. In this passage there are many weather signs exactly or very close to those found in *DS* and Aratos, but Vergil's source could conceivably be limited to Varro's and/or Cicero's translations. With Vergil, however, it is probably better to assume more rather than fewer sources.<sup>58</sup> We have already seen that Vergil read and borrowed from Varro Atacinus. The other Varro (Reatinus) was also read,<sup>59</sup> but it is not always possible to prove that a passage in Vergil for which there is a parallel in a prose fragment of Varro did not come from *DS* if not from Aratos; e.g., on the subject of winds as storm signs, *DS* 21.140 f. ~ Varro ap. Isid. *DNR* 38.2 ~ Arat. 933 f. ~ Verg. *G.* 1.370–373. As noted in the comm. ad 21.190 f. (where all are quoted in full), Vergil omits one wind from the four given by *DS* and Aratos, and Varro may be quoted only in part; thus we cannot know which sources Vergil had in mind when he wrote his verses. In this case, though, as Gillespie 51 notes, "Vergil is closer to Varro Reatinus than he is to Aratus, for Aratus speaks only of lightning, whereas Varro and Vergil specify that the significance of this weather-sign lies in lightning from the North in conjunction with thunder from the East (or West). One is tempted to see also in the similar conjunctions used (*dum ... et dum : cum ... et cum*) and in the repetition of the words *de parte* evidence of Vergil's direct use of Varro Reatinus." See also M. P. Cunningham, "A note on Latin poetic

<sup>56</sup> Cf. W. E. Gillespie, *Vergil, Aratus, and Others: The Weather Sign as a Literary Subject* (Diss. Princeton 1938) 43–51, who ably demonstrates Vergil's borrowings from Varro (against, e.g., Kroll *RM* 70 [1915] 603).

<sup>57</sup> Cf. A. La Penna, "Esiodo nella cultura e nella poesia di Virgilio," in *Hésiode et son influence* (*Entretiens Hardt* 7) (Vandœuvres-Genève 1962) 213–270 (repr. in G. Arrighetti [ed.] *Esiodo: Letture critiche* [Milan 1975] 215 ff.); id., "Esiodo," in *Enciclopedia Virgiliana* (Rome 1984) 1.386–388 (with bibliographical survey); D. Wender, "From Hesiod to Homer by Way of Rome," *Ramus* 8 (1979) 59–64; D. Sider, "Hesiod and Vergil," *Vergilius* 34 (1988) 15–24.

<sup>58</sup> Cf. L. A. S. Jermyn, "Weather-signs in Virgil," *Greece and Rome* 20 (1951) 26–37, 49–59.

<sup>59</sup> Cf. L. P. Wilkinson, *The Georgics of Virgil: A Critical Survey* (Cambridge 1969) 65–68.



imitation,” *CB* 30 (1953/4) 41, 43 f., who tries (persuasively) to demonstrate how Verg. *G.* 1.375 f. draws from Aratos 954 f.; Cicero’s translation of this passage (*Div.* 1.15); and Varro *Atac.* fr. 22 Morel = fr. 14 Courtney.<sup>60</sup> His description of *corvi* at 410 seems to bypass the inaccuracy of Aratos 1003–06 and go back directly to *DS* 52.384–6.<sup>61</sup> That Vergil’s arrangement is his own proves nothing, as this particularly fine poet was capable of reordering the signs he found in any or all of his sources in his own idiosyncratic fashions.<sup>62</sup> Perhaps the surest sign (the appropriate word in this context) that Vergil read Aratos is the former’s imitating the latter in the use of anagrams, which was Aratos’ hidden sphragis/sign of authorship; cf. M. Haslam, “Hidden signs: Aratos *Dio-semeiai* 46 ff., Vergil *Georgics* 1.424 ff.,” *HSCP* 94 (1992) 199–204.

Note that Vergil’s introduction to his weather sign section echoes *DS* in providing what seems to be a table of contents: *atque haec ut certis possemus discere signis, | aestusque pluviasque et agentis frigora ventos* (*G.* 1.351 f.). In fact, though, Vergil’s list is only partially followed topic by topic in what follows, and the topics are wind, rain, and fair weather. In other words, Vergil’s didactic table of contents misleads the reader. Vv. 354–373, signs of wind (sea, mountain sounds, waves, gulls’ screeching, shooting stars, chaff, leaves, feathers); 373–392, signs of rain (cranes, heifers, swallows, frogs, ants, rainbow, rooks, sea birds, ravens, lamps), 393–423, signs of fair weather (stars, moon, clouds, halcyons, pigs, mist, owls, rooks). Then, by signifier rather than by event, what the moon, winds, and sun may portend, 424–463.

Lucan 5.540–559. Amyclas tells Caesar, who has asked him to set sail, *multa quidem prohibent nocturno credere ponto*, and proceeds to list these *multa* [sc. *signa*], many of which are found also in *DS* (see index locorum) and other weather literature. For the most part, not wanting to bore Caesar with too much technical material, he merely lists bad signs

<sup>60</sup> See further Jocelyn (above, n. 55); A. Grilli, “Virgilio e Arato (a proposito di *Georg.* 1.187 ss),” *Acme* 23 (1970) 145–184. The most detailed array of parallels is in H. Morsch, *De Graecis auctoribus in Georgicis a Vergilio expressis*. (Diss. Halle 1878) 13–30, who argues that Vergil follows Aratos closely.

<sup>61</sup> Jermyn (see above, n. 58) 26–37, 49–59; Wilkinson (see above, n. 59) 237 f.

<sup>62</sup> They are first arranged in the manner of *DS*; i.e., by result rather than by sign: wind and storm together (356–369), rain (370–392), fair weather (393–423, and this, oddly, is in fact a description of fair weather itself rather than signs of its imminence, despite 394 *certis poteris cognoscere signis*). Then they are arranged by sign: moon (424–439) and sun (440–463). For a different ordering scheme, see M. Erren, *P. Vergilius Maro: Georgica*. Bd. 2, *Kommentar* (Heidelberg 2003) 197, 216, 234 f.

without specifying whether they portend wind, storm, or rain: “*nam sol non rutilus deduxit in aequora nubes | concordisque tulit radios: Noton altera Phoebi, | altera pars Borean diducta luce vocabat. | orbe quoque exhaustus medio languensque recessit | spectantes oculos infirmo lumine passus. | lunaque non gracili surrexit lucida cornu | aut orbis medii puros exesa recessus, | nec duxit recto tenuata cacumina cornu, | ventorumque notam rubuit; tum lurida pallens | ora tulit voltu sub nubem tristis ituro. | sed mihi nec motus nemorum nec litoris ictus | nec placet incertus qui provocat aequora delphin, | aut siccum quod mergus amat, quodque ausa volare | ardea sublimis pinnae confisa natanti, | quodque caput spargens undis, velut occupet imbrem, | instabili gressu metitur litora cornix. | sed si magnarum poscunt discrimina rerum, | haud dubitem praebere manus: vel litora tangam | iussa, vel hoc potius pelagus flatusque negabunt.*” It is interesting to note that when Amyclas casts off, what follows are god-sent portents of the spooky unintelligible sort, which Caesar chooses to ignore.

Seneca does not devote a special section to weather signs but frequently mentions them when appropriate: *NQ* 1.1.12, 1.2.5, 1.2.8–10, 1.6.1, 1.11.1, 2.27.2, 7.28.1; cf. Böhme 35 f.

Suetonius wrote on weather signs, perhaps in his *Pratum*, quoted by Isidore of Seville *De Natura Rerum* 38. Cf. A. Reifferscheid, *Suetonii Tranquilli Praeter Caesarum libros reliquiae*, (Leipzig 1860) 233–237.

Geminus (1st cent. AD). Appended to his *Eisagoge* is a parapegma beginning in the summer that collects material from earlier, named, sources. Arrangement is by zodiacal sign. Here is the first, Cancer:

α' ἡμέρα Καλλίππῳ<sup>63</sup> Καρκίνος ἄρχεται ἀνατέλλειν· τροπαὶ θεριναί· καὶ ἐπισημαίνει.  
 θ' ἡμέρα Εὐδόξῳ νότος πνεῖ.  
 ια' ἡμέρα Εὐδόξῳ Ὡρίων ἑῷος ὅλος ἐπιτέλλει.  
 ιγ' ἡμέρα Εὐκλήμονι Ὡρίων ὅλος ἐπιτέλλει.  
 ις' Δοσιθέῳ Στέφανος ἑῷος ἄρχεται δύνειν.  
 κγ' Δοσιθέῳ ἐν Αἰγύπτῳ Κύων ἐκφανῆς γίνεται.  
 κε' Μέτωνι Κύων ἐπιτέλλει ἑῷος.  
 κς' Εὐκλήμονι Κύων ἐπιτέλλει. Εὐδόξῳ Κύων ἑῷος ἐπιτέλλει· καὶ τὰς ἐπομένας ἡμέρας νε' ἐτησίαι πνέουσιν· αἱ δὲ πέντε αἱ πρώται

<sup>63</sup> This dative (“according to/as found in [a work of] X”) is common in parapegmatic literature; cf. K-G 1.422 Anm. 21.

πρόδρομοι καλοῦνται. Καλλίπῳ Καρκίνος λήγει ἀνατέλλων  
 πνευματώδης.  
 κη' Εὐκτῆμονι Ἄετος δύνει χειμῶν κατὰ θάλασσαν ἐπιγίνεται.  
 λ' Καλλίπῳ Λέων ἄρχεται ἀνατέλλειν νότος πνεῖ καὶ Κύων ἀνατέλ-  
 λων φανερός γίνεται.  
 λα' Εὐδόξῳ νότος πνεῖ.

Lehoux, *Paraepgmata* 34 argues that this “paraepigma probably antedates the late second century BC,” and that it was probably added by Geminus himself.

Columella (1st cent. AD). *RR* 11.2.4–98 paraepgmatically correlates the duties of the bailiff (*villicus*) with the changing weather of the year, beginning on January 13th. Cf. O. Wenskus, “Columellas Bauernkalender zwischen Mündlichkeit und Schriftlichkeit,” in W. Kullmann et al. (eds.), *Gattungen wissenschaftlicher Literatur in der Antike* (Tübingen 1998) 253–262, who demonstrates Columella’s debt to the literary tradition.

Pliny *NH* 18.340–365, ending the georgic book 18, which had earlier cited (i.a.) Hesiod, Demokritos, Xenophon, Cato, Varro, and Vergil (note in particular 321 *Vergilius ... Democriti secutus ostentationem*); the weather chapters name Demokritos and Vergil (340 f.) and quote Varro *Reat.* at length (348 f.). In his *summarium* of sources for Book 18 (given in Book 1), Pliny also names Aristotle, Eudoxos, Theophrastos, and Aratos, to mention only the most likely of his sources for weather signs; unfortunately Pliny does not tell us which authors supplied which facts.<sup>64</sup> Pliny mentions Vergil as someone also interested in the subject (see above); i.e., he (Pliny) will draw on the same sources as Vergil did—an inference that seems to be justified by the many instances where *DS*, Aratos, Vergil, and Pliny record the same signs (if not all four, then all but Vergil, who devotes the shortest space to the subject). Pliny’s arrangement is orderly and more practical than that of

<sup>64</sup> Unfortunately, W. Schlottmann, *De Auctoribus quibusdam in Plini Naturalis Historiae libro xviii* (Diss. Rostock 1893) does not consider the weather section of this book. On Pliny’s summary list of sources, now gathered in book 1 but which originally stood at the head of each respective papyrus book roll, cf. A. Doody, “Finding facts in Pliny’s Encyclopaedia: The *summarium* of the *Natural History*,” *Ramus* 30 (2001) 1–22. For some recent work on Pliny, cf. R. French, *Ancient Natural History* (London 1994), c. 5; J. F. Healy, *Pliny the Elder on Science and Technology*, Oxford 1999; T. Murphy, *Pliny the Elder’s Natural History: The Empire in the Encyclopedia*, Oxford 2004.

*DS*: *prognostica a sole, a luna, stellis, tonitribus, nubibus, nebulis, ignibus terrestribus, aquis, ab ipsis tempestatibus, ab animalibus aquatilibus, a volucris, a quadrupedibus*. This, from his table of contents in book 1, is rather accurate, except that where the summary has *ab ipsis tempestatibus*, book 18 has a miscellaneous section (360) containing miscellaneous signs derived from noises made by mountains, trees, other vegetations, and (if *campanis* is right) bells; and another miscellaneous section is tagged on containing signs from bees, ants, trefoil, and the smudges left by cooking vessels. Many of Pliny's signs duplicate those of *DS* (see the index locorum), but Pliny also incorporates many weather signs which had not appeared earlier in our extant literature.<sup>65</sup> Kroll reasonably argues that Pliny's source, perhaps Varro, had access to an earlier version of *DS* which had the signs ordered as they now appear in Pliny.<sup>66</sup>

Dionysios the Periegete (2nd cent. AD) was credited with a *Diosemmiai* (a term also applied to the last section of Aratus); *Vit. Chis.* 81.14. Perhaps this is the same work as the *Meteorologoumena*, ascribed by Souda to Dionysios of Corinth; cf. Knaack, "Dionysius (94)," *RE* 5.1 (1903) 915–924, esp. 923.

Ptolemy, *Tetrabiblos* 2.12 f. (2nd cent. AD). Chapter 12 discusses in general terms the ways in which various stages of the moon in combination with various solstitial or equinoctial heavenly phenomena affect weather. This is similar to but far more sophisticated than what is found in *DS* cc. 5–8. c. 13 contains both general and specific observations *Περὶ τῆς τῶν μετεώρων σημειώσεως*, i.e., sun, moon, halos, parhelia, constellations (esp. the Manger; cf. *DS* 23.156, 43.314 f., 51.370 f.), comets, meteors, and clouds; excluded, therefore, are animal signs. See Heeger 43–46 and the index locorum.

<sup>65</sup> One in particular, hitherto unique, is now paralleled by the new Poseidippos epigram Austin-Bastianini 21.1 f. νηὶ καθελκομένη πάντα πλέον' ἰνὶ φανήτω | ἵρηξ, αἰθυλῆς οὐ καθαροπτέρυγος, with which compare Pliny *NH* 18.362 *mergi* (= αἰθυσιαί) *anatesque pinnas rostro purgantes ventum*. Cf. Bastianini and Gallazzi, *Posidippo di Pella* (see above n. 47); Sider, "Poseidippos on weather signs" (see above, p. 18).

<sup>66</sup> W. Kroll, "Plinius (5) der Ältere," *RE* 21 (1951) 271–439, here at 335; cf. Böhme 36–40.

Aelian, *Natura animalium* 7.7–8 (2nd–3rd cent. AD). Chapter 7 (mentioned above, under Aristotle), a self-contained unit on avian weather signs, is introduced with the words Ἀριστοτέλους ἀκούω λέγοντος ὅτι κτλ. Chapter 8 begins by turning to other sources and nonavian (mostly animal) signs: Egyptians, who say that antelopes are the first to know when Sirius rises; and Libyans, who say that goats give signs of imminent rain when they rush (sc. faster than usual) toward their food; cf. *DS* 39.280, geese honking more than usual and fighting over their food as a sign of storm. Then follow anecdotes about the weather-predicting skills of Hipparchos and Anaxagoras (which have nothing to do with animals), followed in turn by animal weather signs, two of which appear in *DS* (25.175, 41.301; see index locorum). Chapter 9 goes on to cover other subjects. Cf. M. Wellmann, “Juba, eine Quelle des Aelian,” *Hermes* 27 (1892) 389; id. “Pamphilos,” *ibid.* 51 (1916) 1.

Almost all of Aelian’s signs can be found in *DS*, but if it can be assumed that *DS* had reached essentially its final form by his time, the fact that Aelian 7.7 contains a few signs not in *DS* argues for Aelian’s having direct access to Aristotle’s original text rather than for his citing *DS* as though it were by Aristotle. One should note, however, that about half of the signs not in *DS* are for fair weather, the shortest section in *DS*, which might lead one to think that the assumption made just above is wrong; i.e., that *DS* did indeed suffer further abridgement after the second or third century—and that Aelian’s source is *DS* rather than Aristotle, as Heeger 42 f. believes. It is also worth noting that *DS* and Aelian share some uncommon words:<sup>67</sup> περυσίζω (*DS* 18.120, 28.192), ἱεραιίζω (see above, p. 17), ἐπιρροίζω (16.107), but both *DS* and Aelian could have drawn these independently (the former via Theophrastos) from Aristotle.

Vegetius *Epitoma Rei Militaris* 4.41 (4th–5th cent. AD). *De Prognosticis*. 1 *Multis quoque signis et de tranquillo procellae et de tempestatibus tranquilla produntur, quae velut in speculo lunae orbis ostendit.* 2 *Rubicundus color ventos, caeruleus indicat pluvias, ex utroque commixtus nimbos et furentes procellas.* 3 *Laetus orbis ac lucidus serenitatem navigiis repromittit, quam gestat in vultu, praecipue si quarto ortu neque obtusis cornibus mutila neque infuso fuerit humore fuscata.* 4 *Sol quoque exoriens vel diem condens interest utrum aequalibus gaudeat radiis an obiecta nube varietur, utrum solito splendore fulgidus an ventis urgentibus igneus nive*

<sup>67</sup> Cf. Martin’s Budé comm. ad Arat. 918 f.

*pallidus vel pluvia sit impendente maculosus. 5 Aër vero et mare ipsum nubiumque magnitudo vel species sollicitos instruit nautas. 6 Aliquanta ab avibus, aliquanta significantur a piscibus, quae Vergilius in Georgicis divino paene comprehendit ingenio et Varro in libris navalibus diligenter excoluit. 7 Haec gubernatores sese scire profitentur, sed eatenus, quatenus eos peritiae usus instituit, non altior doctrina formavit.* (ed. M. D. Reeve; see index locorum). As noted above, Vegetius cites both Vergil and Varro.

Boethius *De Natura Rerum* c. 36.<sup>68</sup> *Signa Tempestatum vel Serenitatis. Sol in ortu suo maculosus vel sub nube latens pluvium diem praesagit. Si rubeat sincerum, si palleat tempestuosum; si concavus videtur, ita ut in medio fulgens radios ad austrum et aquilonem emittat, tempestatem humidam et ventosam; si pallidus in nigras nubes occidat, aquilonem ventum. Caelum si vespere rubet serenum diem; si mane tempestuosum significat. Ab aquilone fulgur et ab euro tonitrus tempestatem et ab austro flatus aestum portendit. Luna quarta si rubeat quasi aurum ventos ostendit. Si summo in corniculo maculis nigrescit, pluvium mensis exordium; si in medio, plenilunium, serenum. Item cum aqua in nocturna, navigatione scintillat ad remos, tempestas erit. Et cum delphini undis saepius exiliunt quo illi feruntur, inde ventus exurget et unde nubes discussae caelum aperiant.*

Geoponika 1.2–4. This is a tenth-century compilation of passages pertaining to agriculture; sources are given for each chapter.<sup>69</sup> These three chapters of the first book are headed as follows: 2. Προγνωστικὰ εὐδαιμονοῦ ἀέρος. Ἄρατος.,<sup>70</sup> 3. Προγνωστικὰ χειμερινοῦ ἀέρος, καὶ ἐκ ποίων τεκμηρίων ὁμβροὺς χρή προσδοκᾶν. Τοῦ αὐτοῦ. 4. Προγνωστικὰ μακροτέρου χειμῶνος. Τοῦ αὐτοῦ. The following chapter, credited to Didymos, concerned with Προγνωστικὰ πότερον πρώϊμον ἢ ὄψϊμον ἔσται τὸ ἔτος, is comparable to *DS* c. 44, but there are no

<sup>68</sup> Ed. C. W. Jones, in *Bedae Venerabilis Opera*, Pars I, *Opera Didascalica* = *Corpus Christianorum, Ser. Lat.* CXXIII A (Turnholti 1975) 173–234.

<sup>69</sup> Cf. Böhme 45–48; and for a brief review of the several controversies surrounding this work, A. Kazhdan, “Geoponika,” in: *Oxford Dictionary of Byzantium* (eds. A. Kazhdan et al.), Oxford (1991) 2. 834. See also R. Rodgers, “Κηποποιία: Garden making and garden culture in the Geoponika,” in A. Littlewood and H. Maguire, *Byzantine Garden Culture* (Washington D.C., 2002) 159–175. (Rodgers is preparing a commentary on the *Geoponika*.)

<sup>70</sup> W. Gemoll (see above, n. 47) 51–58 argues that in fact the source is the scholia to Aratos, but since these were probably not available apart from Aratos there is no doubt that the compiler read both but modelled (there is no exact copying) his prose summary on the scholia. This is a distinction without a difference. Cf. Böhme 46.

common signs. cc. 2–4, however, are cited frequently throughout the commentary. Cf. Heeger 46–52.

Michael Psellus *περὶ ὁμοπλατοσκοπίας καὶ οἰωνοσκοπίας*, ed. R. Hercher, *Philologus* 8 (1853) 166–168, identified only as coming *ex codice Vindobonensi*. ὁμοπλατοσκοπία is obviously divination through shoulder blades and not relevant to *DS*. οἰωνοσκοπία, on the other hand, begins with true bird signs of impending weather, but also includes signs from lizards, the sea, clouds, mountain tops, lamp snuff, animals, trees, and bees.

Cod. Mut. 85 (III C 6) fol. 91 (15th cent. AD), *CCAG* 4.4 (ed. F. Cumont, Brussels 1903) 110. *Περὶ νεφελῶν ἐπίσκεψις*. αἱ νεφέλαι ἀερῶδες (lg. ἀερῶδεις?) πετόμεναι καθαρὰς τὰς ἄκρας τοῦ ὄρους δεικνύουσαι εὐδίαν σημαίνουσιν, καὶ ἐπὶ τῆς θαλάσσης χθαμαλαὶ φαινόμεναι κατὰπασιν χειμῶνος δηλοῦσιν. ἐὰν ἐπὶ τὰς κορυφὰς τῶν ὀρέων ἐφεζόμεναι καὶ ὡς ἐν κύκλῳ ἐπαίρωνται ἕως κορυφῶν τῶν ὀρέων, ἐκεῖθεν ἐλεύσεται ὁ ἄνεμος. ἐὰν αἱ κορυφαὶ τῶν ὀρέων ὧσι καθαράι, τοῖς δὲ στέρνοις αὐτῶν προσπελάζει τὰ νέφη, δεικνύουσιν αὗται τὸν ἐπιόντα ἄνεμον (cf. *DS* 34.242 f.). ὁμίχλη ἑωθινὴ ἐν μὲν τῇ γῇ καὶ τοῖς πεδίοις πίπτουσα εὐδίαν σημαίνει· πρὸς οὐρανὸν δὲ ἀνερχομένη νεφέλη γίνεται καὶ ὄμβρους καὶ ἀνέμους ἔχει συνεχεῖς· ὁμίχλη εἰ μὲν παχνώσῃ, βορρᾶν δηλοῖ, εἰ δὲ ὑγρὰ καὶ δροσώδης, εὖρον ἢ νότον· ὁμίχλη (εἰ) διαχυθῇ ἕως τρίτης ὥρας, εὐδίαν σημαίνει, εἰ δὲ περαιτέρω γένηται, αἰθρίαν καὶ εὐδίαν ἔξει τὸ πέλαγος καὶ ζέφυρον ἄνεμον. “On the observation of Clouds. Clouds floating filled with aer revealing clear mountain peaks signal clear weather; and appearing low lying on the sea they reveal a pause in a storm. If while sitting on the mountain peaks they form a raised ring up to the peaks, the wind will come from here. If the mountain peaks are clear while clouds approach their faces, these (clouds) point to the approaching wind. A morning mist falling on the ground and the plains signals fair weather; but if rising skyward it becomes a cloud it has both showers and winds. If a mist congeales it reveals a north wind; if it is moist and dewy, it reveals a south or south-east wind. If a mist is dispersed at the third hour it signals fair weather; but if it lasts beyond this the sea will have bright and fair weather and a western wind.”

Cod. Laurent. 28.32, ff. 12–14 (15th cent. AD) ed. M. Heeger, *De Theophrasti qui fertur περὶ σημείων libro*. (Diss. Leipzig 1889) 66–72; introduced 60–65. This section is followed, as in the *Geoponika*, by a chapter περὶ τοῦ ἐρχομένου ἔτους εἰ πρόῳμον ἔσται ἢ ὄψιμον (not printed by Heeger). Arrangement is by signs provided by the sun, moon, days of the month, meteorological phenomena, animals, the last being ordered alphabetically. Following this is a section on signs derived from days of the month. Many of the signs are those found in *DS* and Aratos.

Cod. Paris. 2229, ff. 22, *CCAG* 8.1 (ed. F. Cumont, Brussels 1929) 137–40. Four paragraphs: 1. Περὶ τῆς ἐκ τῶν ζώων σημασίας, ὅσα χειμῶνας καὶ εὐδίας καὶ ἀνέμων κινήσεις προσημαίνουσιν, arranged alphabetically by animal, eight under ὄρνιθες, some of which are specified only as “sea” or “land” birds; 2. Περὶ τῶν ἐξ ἡλίου σημείων; 3. Περὶ τῶν ἐκ σελήνης σημείων; 4. Περὶ ἵριδος.

Cod. Matrit. BN 4616, *CCAG* 11.2 (ed. C. O. Zuretti, Brussels 1934) 174–183. Zuretti reordered passages from this ms. to conform to the arrangement in cod. Laur. (see above): signs from sun (f. 163<sup>v</sup>), parhelia (f. 157<sup>v</sup>), moon (f. 158<sup>v</sup>, but also containing signs from the sky [its color, meteors, clouds]), and animals (f. 160<sup>r</sup>, arranged alphabetically). The compiler of these passages (assuming only one author) goes beyond the bare listing found in most prose weather literature, reshaping the standard material into a prose that goes beyond the merely serviceable. Note in particular how he likens aer occluding the sun to the shading employed by painters (p. 174 f. Zuretti): ὃν γὰρ τρόπον οἱ ζωγράφοι ἀνθρώδεις τόπους γράφοντες τῷ φωτὶ τραχύνουσι τὴν ὄψιν, ὥστε τῇ φύσει τοῦ μὲν λαμπροῦ προβάλλοντος ἔξω καὶ διωθοῦντος τὴν φαντασίαν, τοῦ δὲ μέλανος ὑποσκιάζοντος ἡμαθύνεσθαι<sup>71</sup> δοκεῖν, οὕτω καὶ περὶ τὸν ἥλιον τὸ μὴ φαινόμενον τῇ ὄψει κατὰ τὴν ἔμφραξιν τοῦ ἀέρος, οἷον εἰ ἐκκοπή τοῦ μέσου σαπροῦ διὰ τὴν σκιὰν ὑποφαίνεται. Although this codex is late, Böker 1613 f. argues that this text was Pliny’s source and that it best represents the form of the *Grundschrift*.<sup>72</sup>

<sup>71</sup> μακρύνεσθαι Delatte βαθύνεσθαι Kroll, *Philol. Wochenschr.* (1935) 887, approb. Rehm, rev. of Zuretti, *Byz. Zeitschr.* 40 (1940) 223, coll. schol. Arat. 492.12.

<sup>72</sup> For surveys of weather literature just past this point, see L. Thorndike, *A History of Magic and Experimental Science* (New York 1934) passim (see the index, s.v. weather, predictions); S. K. Heninger, Jr., *A Handbook of Renaissance Meteorology* (Durham 1960) 217–224.



5) *Structure of De Signis*. A prologue (cc. 1–9) is followed by five sections (although modern editors merge the short fifth section into the preceding), each listing various signs for (i) rain (10–25), (ii) wind (26–37), (iii) storms (38–49), and (iv) fair weather (50–55); followed by (v) a miscellany introduced under the rubric σημεῖα ὅλων τε τῶν ἐνιαυτῶν ... καὶ τῶν μορίων. Other types of weather are subsumed under one or another of these chapters; e.g., snow under storms (40, 42) and hurricanes under winds (30, 36, 37).

This is not an unreasonable arrangement, although the prologue suggests that an earlier redaction had suffered abridgement and the final section suggests augmentation. It is, however, impractical to arrange signs by results. A work designed to be a *helpful* weather guide would arrange things by signs, so that, for example, one could look up sweaty feet to see what this sign portends. As noted above, many collections of signs are so arranged. Since within the four major results there is a sort of arrangement by sign (see below), our author/compiler may have drawn from one or more sources so arranged.<sup>73</sup> The several duplicated signs can now be explained: what originally was stated in the form “*x* signals *m* or *n*” would show up in *DS* as “*x* is a sign of *m*” in one place and as “*x* is a sign of *n*” in another, perhaps with the addition in one or both places of the frequent modifying phrase “for the most part.”<sup>74</sup>

**Prologue** The first sentence nicely identifies the work’s aim and lays out the four main sections that follow: Σημεῖα ὑδάτων καὶ πνευμάτων καὶ χειμώνων καὶ εὐδιῶν ὧδε ἐγράψαμεν καθ’ ὅσον ἦν ἐφικτόν, ἃ μὲν αὐτοὶ προσκοπήσαντες, ἃ δὲ παρ’ ἐτέρων οὐκ ἀδοκίμων λαβόντες. τὰ μὲν οὖν ἐπὶ τοῖς ἄστροις δυομένοις καὶ ἀνατέλλουσιν ἐκ τῶν ἀστρονομικῶν δεῖ λαμβάνειν. Who, though, is claiming credit for authorship? No work of Aristotle begins this way,<sup>75</sup> although

<sup>73</sup> This has been argued by Böhme 20 and Heeger 15, and supported by Arrighetti 419. Cronin “Authorship” attempts what seems to be too detailed a taxonomy of the signs in order to distinguish among *DS*’s sources.

<sup>74</sup> On these double signs, see Arrighetti 424–428.

<sup>75</sup> The first-person plural that sometimes appears at the beginning of an Aristotelian work (and thereafter) is short for “we men in general” (in the indicative) or “I the author and you the reader/student” (often in the hortatory subjunctive). Cf. *Top.* 100a18 ἡ μὲν πρόθεσις τῆς πραγματείας μέθοδον εὐρεῖν, ἀφ’ ἧς δυνησόμεθα συλλογίζεσθαι κτλ., *Soph. Elench.* 164a20–22 περὶ δὲ τῶν σοφιστικῶν ἐλέγχων καὶ τῶν φαινομένων μὲν ἐλέγχων ὄντων δὲ παραλογισμῶν ἀλλ’ οὐκ ἐλέγχων λέγωμεν, *Pol.* 1252a1 ἐπειδὴ πᾶσαν πόλιν ὀρῶμεν κοινωνίαν τινὰ οὖσαν κτλ., *Anal. Pr.* 24a14, *Phys.* 402a1–4. Aristotle does, though, allude to his authorship often enough with an εἴρηται vel sim. to place a passage in

Pseudo-Aristotle offers the parallels of *De mundo* 391a1 πολλάκις μὲν ἔμοιγε θεῖόν τι ... ἡ φιλοσοφία ἔδοξεν εἶναι, *Magna Moralia* 1181a24 ἐπειδὴ προαιρούμεθα λέγειν ὑπὲρ ἠθικῶν κτλ, and *Rhet. ad Alex.* 1420a6 ἐπέστειλάς μοι κτλ. It is worth noting that *On the Locations and Names of the Winds*, which is described in the codd. as coming from Aristotle's *Περὶ σημείων* ends with ὑπογέγραφα δέ σοι καὶ τὰς θέσεις αὐτῶν, ὡς κεῖνται καὶ πνέουσιν, ὑπογράφας τὸν τῆς γῆς κύκλον, ἵνα πρὸ ὀφθαλμῶν σοι τεθῶσιν (i.e., he added a sketch of a windrose to his text).

After this first sentence, though, the prologue introduces several topics that are not noticeably present in *DS*.<sup>76</sup> c. 2 speaks of the significant meanings of the astronomical risings and settings of the stars (Arcturus, Sirius, and the Pleiades), but these annual signs are all but ignored in *DS*. c. 3 seems at first appropriate in speaking of the signs produced by mountains and their valleys, as these are indeed found in the work.<sup>77</sup> What is deceptive, however, is the causal (scientific) explanation that accompanies this statement: “For, as winds start up, the clouds crash into such places [mountains]; and as the winds reverse direction the clouds follow along in turn, and as they become more moisture-laden they gather and settle in the hollows,” which leads one to believe that such explanations will be given as appropriate, although in fact this is just about the last time *DS* bothers to explain why a particular sign or type of sign works.

Another noteworthy feature of the prologue lies in its identifying four astromomers (or five, if Phaeinos is included; his name may have been interpolated), who are credited with providing (all? many of?) the signs and the locations from which they made their observation; also noteworthy is its declaring the need to employ such experts. This is distinct from Aristotle's occasionally naming (say) Plato or Eudoxos, with whom he will then disagree, at least in part;<sup>78</sup> and from Theophrastos' doxography in *De Sensibus*, where the views of Empedokles, Anaxagoras,

the broader context of his writings; cf. the beginning of *Mete.* ... καὶ περὶ γενέσεως καὶ φθορᾶς τῆς κοινῆς εἴρηται πρότερον (338a24).

<sup>76</sup> Cronin “Authorship” 307 outlines the sections as follows: 1. Subject and sources; 2. astral risings and settings; 3. “some signs are peculiar to mountains and can best be learned from a local expert”; 4. others use local features; 5. signs from animals, domestic observations, sun, and moon; 6.–9. the halfway divisions of year, month, and day.

<sup>77</sup> See cc. 20, 31, 34, 43, 45, 51.

<sup>78</sup> Note too the first sentence of Th. *De Lass.* ἐν τίνι ποθ' ὁ κόσμος ἦ τίσιν ὡς πρώτῳ, πρότερον ὡς Ἐπιγένης ὑπέλαβεν ἐν φλεβὶ καὶ νεύρῳ κτλ. Fabricius, “Epigenes (18),” *RE* 6 (1907) 66 suggests that this Epigenes is the same one mentioned by Pliny *NH* 31.34.

Plato, et al. are critically arrayed. Indeed, *DS*'s list is most like (to compare small with large) Pliny's list of sources in Book 1 of *NH*.

C. 5 makes mention of weather signs from animals and, even better, sun and moon, especially at the time of their rising and setting. This accurately describes much of *DS*, but what immediately follows does not: from here to the end of the prologue *DS* tells us to pay attention the days surrounding the new moon, to divisions of the year, the month, and the day. Although there will be some signs that call for reading the crescent moon, no further use is made of these last chapters.

In sum, cc. 1–9 read very much like the prologue to a larger, more comprehensive, work on weather signs. Which in turn raises the questions of when it—the prologue and the work it originally introduced—was written, and when, and perhaps in how many stages, it was abridged to become *DS*. (See below.) Is what we have simply a fragment having suffered careless and mechanical loss, or is it the result of (still somewhat careless) editorial curtailment?<sup>79</sup> Böhme 7 concludes that *DS*'s prologue was originally meant to be attached to a *parapegma*, but as we have seen, the prologue clearly looks forward to the kind of weather signs that are still found in the text, and these (such as signs from animals and clouds) do not belong to *parapegmata*.<sup>80</sup>

The chapters on rain, wind, storms, and fair weather. The first thing to note is that the signs are arranged by event, so that, e.g., a crow acting in one way to signal rain is separated from a crow acting another way so as to signal storm. To a farmer or sailor who had all his pertinent signs committed to memory (and hence not in need of a work like *DS*), this does not matter, but anybody wanting to learn weather signs at one go would probably prefer to have them arranged by sign rather than event, so that one could quickly look up “crow” and its various signifying actions. This direction, from sign to outcome, we do in fact find in later, Byzantine collections, which even more helpfully

<sup>79</sup> Cf. Böhme 5. Unfortunately, in examining the inconcinnity between the text proper and what the prologue promises, Böhme 6 depends in part on Schneider's conjecture *τρόπων* in c. 5; see our text and commentary.

<sup>80</sup> In part Böhme derives this conclusion from the last sentence of *DS*, τοῖς δὲ ἄστροις εἶωθεν ὥς ἐπὶ τὸ πολὺ σημαίνειν καὶ ταῖς ἡμερίαις καὶ τροπαῖς, οὐκ ἐπ' αὐταῖς ἀλλ' ἢ πρὸ αὐτῶν ἢ ὕστερον μικρῶ, which he argues would fit a *parapegma*. This may well have been the origin of this sentence, but as we have noted, the very end of *DS* contains a number of disjointed sentences seemingly added on a some later stage, none of which accordingly can be used to argue for the original nature or purpose of the work.

Table 1: Signs as arranged in *De signis*

<i>Rain</i>	<i>Winds</i>	<i>Storm</i>	<i>Fair Weather</i>
10f. sun	26 sun	38 sun	50 sun
12 moon	27 moon	moon	51 moon
13 shooting stars	28 shearwaters, ducks	cranes	Manger
sun's rays	<i>kepphoi</i>	sparrows	halo
woolly clouds	sparrows	39 geese	clouds
river bubbles	heron	sparrows	Mt. Olympos
14 lamp snuff	29 dog	wrens	Mt. Athos
15 nonaquatic	tides	robin	52 mist
birds	spiderwebs	jackdaw	cranes
toads, frogs	mock suns	40 birds fleeing sea	owls
lizards	30 winds	chaffinch	raven
swallows	creaky furniture	raven	53 crow
ox	sweaty feet	jackdaw	wren
16 shearwaters	pain in foot	cuttlefish	clouds
raven	hedgehog	seal	54 cattle
jackdaw	31 mountain roar	jelly fish	ox
17 hawk	sea calm	cattle	dog
island birds	headlands	41 cattle	cicadas
chickens	land seen from sea	asses	55 mastic
18 duck	halos	animals fighting	
jackdaw	clouds	for food	
rooster	32 lightning	mice	
heron	thunder	42 dog	
19 finch	33 lightning	tree frog	
cooking pot	even/odd days	worms	
centipedes	sun, moon	fire	
dolphin	day/night	lamps	
20 Mt. Hymettos	34 etesian winds	43 Manger	
Lips	clouds	Pleiades	
21 thunder	Mt. Athos	mountains	
lightning	comets	clouds	
Notos	snow	44 seasons	
Zephyros	frost	45 oaks	
22 Euboian mts.	snuff	mtn. clouds	
Mt. Pelion	35–7 names	46 sun	
rainbows	& nature	Mercury	
ants	of winds	bees	
mock suns	wind-borne	wolf	
halos	thistles	47 wasps	
23 Manger		white birds	
flies		wild animals	
24 Mt. Hymettos		Mt. Parnes	
Aigina		48 heat	
winter rains		seasons	
snow		49 oaks	
25 burning coal		mole	
sheep, goats		mice	

arranges the signs in alphabetical order. (Aratos and Vergil are poets and so are free to arrange signs idiosyncratically.)<sup>81</sup>

Within each of four main chapters, however, a certain pattern is maintained: Each begins with signs derived from observations of the sun followed by signs from the moon. Thereafter, however, there is no particular order, not even by broad type. Instead we get a jumble of signs derived from comets, clouds, thunder and lightning, rainbows and other meteorological oddities, mountain tops, lamps, insects, birds, spiders, worms, frogs, and mammals. Only Fair Weather, the shortest, is neatly arranged.<sup>82</sup> (i) 50 f. heavens, (ii) 51 meteorologica (including clouds), (iii) 51 f. mountains clouded or not, mist, (iv) 52–54 animal (first birds, then cattle, dogs, insects),<sup>83</sup> (v) 55 mastic. The oddest signs in *DS* are bubbles on a river surface (13), sparks on a pot while cooking (19), the appearance of the land (dark or white) when seen from sea (31), and the mastic (55). Interspersed are further signs from the sun, and winds, the event signaled in c. 2, can themselves be taken as signs of other events. See Table 1, which is meant to be only a rough guide to the signs, as some are combined, some are broken down into subclasses, and others that are described differently in different passages are here given the same label.

Nonetheless, one can still see some grouping of like signs (e.g., 15–19, 28, 38–40, 52 f. birds; 31 signs from the earth's surface; 40–42, 54 domestic animals), but also that some signs can appear early or late in their sections; cf., e.g., the Manger is late in “Rain,” in the middle in “Storm,” and early in “Fair weather.”<sup>84</sup>

For the most part, the predictions take the form “If sign *x*, then outcome *y*,” where the sign is an instance of earthly or heavenly activity. The conditionality is usually expressed in the form of present general condition (ἐὰν ἀκτῖνες ἀνίσχοντος ἀποτείνωσι πρὶν ἀνατεῖλαι κοινὸν ὕδατος σημεῖον) or with a conditional circumstantial participle (ὄρνιθες λουόμενοι μὴ ἐν ὕδατι βιοῦντες ὕδωρ ἢ χειμῶνα σημαίνουσι).<sup>85</sup> The “sign” in Greek is either σημεῖον or σημαίνειν (see the two exam-

<sup>81</sup> See Kidd 439 for the arrangements of Aratos and Vergil. V. Rose, *Aristoteles Pseudepigraphus* (Leipzig 1863) 243 f. argued that Theophrastos' original *Περὶ σημείων* was arranged by weather sign, but this can only be conjecture.

<sup>82</sup> As noticed by Böhme 15 f.

<sup>83</sup> But two cloud signs in 53 disturbs the pattern.

<sup>84</sup> The Turin codex rearranges the signs. See below, section 9.

<sup>85</sup> Kaibel, “Aratea,” *Hermes* 29 (1894) 116 compares similar statements in the Hippocratic corpus, where σημεῖον *κτλ* are “symptom,” etc., but often of current states rather than as a prognosis of a future course of the disease.

ples just given),<sup>86</sup> although once the adjective *σημαντικά* (51) is used. Many sentences are elliptical, depending on a preceding clause or sentence, so that, e.g., with *ὕδατικόν* one has to understand *σημεῖον*, or *σημαίνει/—ουσι* must be supplied.<sup>87</sup> It is always assumed that a “sign” is not a guarantee, as is frequently made explicit with *ὅλως* (8 ×), *ὥς ἐπὶ τὸ πολὺ* (9 ×), *εἴωθε* (3 ×), *ὥς τὰ πολλὰ* (14 ×), or (*ἐπὶ*) *πολὺ* with the verb (2 ×).<sup>88</sup> *DS*, however, lacks the kind of general statement such as is found in that other Peripatetic work on signs, *Physiognomonika*, which says that it is silly (*εὔηθες*, 807a1) to trust in (only) one sign; and in Aratos, who, no doubt echoing his prose source, concludes with the admonition not only not to despise these weather signs, but also to observe as many as possible (*σήματι σῆμα σκέπτεσθαι*, 1142 f.), “and if two agree, it is more hopeful, while with a third you can be confident” (tr. Kidd).

Generally the outcome is predicted to occur shortly thereafter observation of the sign. Indeed, if no time frame is given, one seems free to assume there will be no long wait, perhaps a day at most. Only when the event deviates from this norm is a time given. Thus, we have predictions of events that will occur (i) “soon” (22.152, *διὰ ταχέων*), (ii) in a day or two (10.66, 21.143), (iii) on the “third” day, i.e. two days later (10.66, 11.70, 46.343), (iv) in a month (27.186, *ὁ μὲν χειμερινὸς διατελεῖ*), (v) over a season (24.166, 25.174, 41.298, 44.324, 48.352, 49.357, 54.397, 56.406 f.),<sup>89</sup> (vi) over six months (56.411), and (vii) “a long time” (26.181, *ἀνέμους πολυχρονίους*).

Addendum. Since the signs in this section are of hail (which had been included in the chapters on rain [25] and wind [35]), wind, rain, and cold (see cc. 44, 46, 48), they could all have fit easily in earlier sections. This and the one mention in this treatise of the Egyptians

<sup>86</sup> *προσημαίνει* appears thrice (25, 31, 52), in exactly the same sense as the simplex, and may have been copied directly from an earlier source without change (the *προ-* is clearly otiose); cf. comm. ad c. 25. *ἐπισημαίνει* appears twice (10, 11), but without an explicit object (which in the context is clearly *ὕδωρ*), so that the sense is more “is indicative/significant.” See the comm. ad c. 10.

<sup>87</sup> Heeger 9 f. regards this frequent ellipsis as proof that *DS* could not have been written even by a student of Theophrastos, but the same thing can be found in Pliny’s passages of weather signs. It is appropriate to the genre.

<sup>88</sup> Again, Heeger 9 uses the repetition of this kind of important and scientifically justifiable type of phrase as argument against Peripatetic authorship.

<sup>89</sup> This tally includes passage where we interpret *ἔτος* as “season”; see comm. on 25.174 *τὸ ἔτος*.

suggest that this last section was added to, rather than incorporated into, a text preceding, although that text may not have been in the form we now have. And if *DS* was written at the latest shortly after Theophrastos, this final section was almost certainly added by a later redactor rather than the one who gave *DS* its basic form. Note that no sign in the addendum reappears in Aratos. See comm. on *DS* 56.419 Αἰγύπτιοι, where it is suggested that Apion is the source for this section.

6) *The Nature of De Signis*.<sup>90</sup> Consistent with the straightforward structure outlined in the previous section, *DS* is a bare-bones technical treatise. After stating its purpose early and clearly and citing its sources, it lays out the facts with no literary flourishes. Allowing for some repetition of what was said earlier, we can characterize it by noting some of its positive and negative features. (i) *DS* is concerned with changes in the weather that are more variable and more specific than those found in Hesiod, i.e., the sort found in *parapegmata*. Some of these changes will occur within minutes, some within days, and others look forward to deviations from the norm over an entire season. (ii) Although some of its signs are the same as or very similar to those read by seers—such as the flight of birds—it seeks only meteorological outcomes rather than, say, victory in battle. (iii) *DS*<sup>91</sup> makes no attempt to be complete, the way, e.g., works that listed all Olympic victors or archons or priestesses of Hera tried to be. All that the author claims is ἐγράψαμεν καθ’ ὅσον ἦν ἐφικτόν (1.2). Omitted are many signs known from other ancient sources. In particular, *DS* in general avoids stating the obvious, which hardly needs to be recorded; e.g., a black cloud approaching from the sea signaling rain (*Il.* 4.275–8). For an exception to this, note 22.137–9, where lightning is given as a sign of rain. None the less, even though a complete list would be a great chore to compose,<sup>92</sup> it would have been easy to add more.

(iv) Excluded also is any overt statement of practical use for these weather signs, although 54.396 f., τέττιγες πολλοὶ γινόμενοι νοσῶδες τὸ ἔτος σημαίνουσι, does provide an oblique health warning. This is par-

<sup>90</sup> This section quickly goes over the same ground as Sider, “On *On Signs*,” in Fortenbaugh and Wöhrle (eds.), *On the Opuscula of Theophrastus* (Stuttgart 2002) 95–111.

<sup>91</sup> Throughout this section, we describe *DS* as we have it, not how it may once have looked.

<sup>92</sup> Note Aratos’ cry of despair, τί τοι λέγω ὅσσα πέλονται | σήματ’ ἐπ’ ἀνθρώπους; (1036 f.), although here Aratos has the Homeric model in mind, which is designed to call attention to the difficulty of the poet’s job and hence of his worth.

ticularly striking, as it seems clear that weather signs were first collected by and for farmers and sailors (see above, n. 2). This is explicit in Hesiod, Vergil, Aratos, and Columella, whose whole (purported) aim is to help the farmer be guided by the weather.<sup>93</sup> (v) And not only does *DS* not state any practical purpose for its collection of weather signs, its arrangement also bespeaks a certain impracticality.<sup>94</sup> As noted above, its arrangement by result runs counter to the idea of a *practical* handbook; i.e., one in which one could look up the sign one has just observed. Thus, if wolves appear in inhabited areas (where, that is, they are not expected), one should be able to look up λύκοι and discover that a storm is indicated. This same sign occurs in 46, but since in the scene we are painting one does not know what the wolf means, one therefore does not know that the entry for wolf in this work occurs between those on bees and wasps toward the end of the chapter on storm signs.<sup>95</sup> It is interesting to note that the *Physiognomonika*, which contains several layers of composition, arranges its signs first by sign in c. 2 (e.g., “movements, gestures, color, characteristic facial expressions, hair, skin, voice, flesh, body parts, and the body as a whole,” 806a29) and then by character in c. 3 (e.g., sanguine temper, courage, irascibility), and then by sign again in c. 6. Thus, “soft hair indicates cowardice” in c. 2 (806a6), “signs of cowardice are soft hair ...” in c. 3 (807b4), and both stiff upright hair and very woolly hair signify cowardice in c. 6 (812b28).<sup>96</sup>

Another sign of the work’s impracticality can be found in its section on the signs of winds, where very often one wind equals another and often not even the direction of the impending wind is indicated. Sailors can make use of most winds, it is true, but the rest of us would like to

<sup>93</sup> Comparison with the *Physiognomonika* will prove useful here and below, since this work, also Peripatetic and perhaps contemporary, is also concerned with σήματα, here those that indicate character. In almost every point of comparison, *Physiognomonika* comes off looking better, i.e., more “Aristotelian.” Thus, on the matter of purpose of reading signs, it makes it clear that knowing how to spot the right signs will enable one to buy a better horse or dog (805a15). Cf. S. Vogt, *Aristoteles: Physiognomonika* (Berlin 1999) 108–112.

<sup>94</sup> It has also been said that stone paraepgmata set up in an agora would have little practical value for farmers and (even less) sailors, but we are not convinced by R. Hannah, “Euctemon’s paraepigma” (see above, n. 26) 129–131, who is disposed to believe that they were meant to give guidance in planning the city’s cults and festivals. These, however, were largely established long before the paraepgmata; nor do the stones make any mention of anything but heavenly phenomena. See next note.

<sup>95</sup> Hannah “Euctemon’s paraepigma” (see above, n. 26) 129–131 also points out the inherent impracticality for farmers and sailors of a paraepigma erected in the center of a city.

<sup>96</sup> See further Sider “On On Signs” (above, n. 90) 104 f.



know what temperature or precipitation a wind is likely to bring with it. Nor are winds referred to as signs in the prologue or made much use of as signs of rain, storm, or fair weather in these respective sections.<sup>97</sup> This occurs only in the final section, which was probably added later to *DS* as an appendix; see 57.416–19 “Also significant are the winds that accompany the descending mists: If, on the one hand, the winds arise from the east and south, they signal rain; but if they arise from the north, they signal winds and cold.” In Th.’s *Winds*, on the other hand, it almost goes without saying that each wind is characterized by its own weather.<sup>98</sup>

*DS*, then, with no recourse to gods, its naming of its sources, and its impractical arrangement, bespeaks a certain scientific appearance. Lacking, however, is any attempt to understand why these signs work as they do, either in general or in particular, as we find in the *Physiognomonika* and in Aristotle himself in his work on weather signs; cf. Arist. fr. 365 Gigon (Schol. in Arat. 1095 ed. Martin), cited in comm. ad 17.116 ὄρνιθες οἳ βιοτεύουσιν ἐν νήσῳ. (There is only one γάρ in *DS*, on 41.304.)

7) *How accurate are the weather signs.* In general, it is easy to see that the more accurate of the signs are the meteorological ones, the less accurate those derived from animal behavior. For Epicurus, in fact, the division is absolute: ἐπισημασῆναι derived from meteorological signs have physical causes, those from animals are due merely to chronological coincidence.<sup>99</sup> For the former we often refer the reader to R. Greenler, *Rainbows, Halos, and Glories* (Cambridge 1980), whose photographs and nontechnical explanations make much clear to the nonscientific classicist. Cf., e.g., on 71 ῥάβδοι, 22.147 f., 151 πολλὰ ἱριδες and παρήλιοι, where we borrow wholesale from Greenler. Animals, on the other

<sup>97</sup> For exceptions, note 20 “If Lips blows at an equinox it signals rain”; 21, where winds together with other signs are portents; and 35–37, where the characteristics of various winds are listed.

<sup>98</sup> To limit ourselves to the second sentence of the prologue: ὅτι δ’ ἐκάστοις [sc. τοῖς ἀνέμοις] αἱ δυνάμεις καὶ ὅλως τὰ παρακολουθοῦντα κατὰ λόγον ἀκολουθεῖ πειράσθαι χρὴ λέγειν, οἷσπερ σχεδὸν διαφέρουσιν ἀλλήλων.

<sup>99</sup> *Ep. Pyth.* 98 ἐπισημασῆναι δύνανται γίνεσθαι καὶ κατὰ συγκυρήσεις καιρῶν, καθάπερ ἐν τοῖς ἐμφανέσι παρ’ ἡμῖν ζῴοις, καὶ παρ’ ἑτεροιώσεως ἄερος καὶ μεταβολῆς. What follows (98–115) is a lengthy meteorological passage giving multiple “scientific” causes for earthquakes, halos, shooting stars, etc., followed by a dismissal of animal weather signs: αἱ δ’ ἐπισημασῆναι αἱ γινόμεναι ἐπὶ τισι ζῴοις κατὰ συγκύρημα γίνονται τοῦ καιροῦ· οὐ γὰρ τὰ ζῶα ἀνάγκην τινὰ προσφέρεται τοῦ ἀποτελεσθῆναι χειμῶνα, οὐδὲ κάθηται τις θεία φύσις παρατηροῦσα τὰς τῶν ζῴων τούτων ἐξόδους ἀπειτα τὰς ἐπισημασῆας ταύτας ἐπιτελεῖ.

hand, seem to us to offer less sure signs of upcoming weather, although there are some notable exceptions. Swallows, do, e.g., fly so low over the surface of a lake before a rain that they seem to strike the water with their breasts (see on 15.101 τύπτουσαι), and the flight of cranes can indeed be read for signs of impending rain (see on 38.276 γέραντοι). Generally, though, the animal signs put forward strike us as less reliable, if not outright false. Nor have we been able to find much interest on the part of scientists, let alone a comprehensive book equivalent to Greenler's, which would list and explain those instances where science can verify animal awareness of impending changes in the weather. It is all the more interesting, therefore, to observe that many of *DS*'s animal signs could easily be placed under the rubric "animal foreknowledge," although our author never takes the trouble to tell us so. Thus, cattle sniffing before rain (15.103) all but calls out for the paraphrase "cattle can smell rain in advance." Similar paraphrases come to mind elsewhere: centipedes creeping toward a wall before rain (19.128), kepphoi (gulls; see comm.) fly toward impending wind (28.193), a hedgehog closes off the entranceway facing impending wind (30.211 f.), geese honk louder than usual while feeding before a storm (39.280), birds flee from the sea before storm (41.288), cattle huddle before a storm (41.297 f.), a wolf comes closer than usual to farmland in winter before a storm (46.342), cranes flying straight indicate fair weather (52.380). This last observation was made also by Aristotle, who provides an explicit statement as to the cranes' foreknowledge; i.e., they are able to see storm clouds before an observer at ground level (see the comm. ad loc.).

Some few animal signs, perhaps fewer than one might have guessed, seem to work on the principle of like-to-like (*similia similibus*), which is a prominent notion in both magic and early Greek philosophy:<sup>100</sup> Non-aquatic birds bathing signal rain (15.97, but see the comm. on λουόμενοι), ravens imitating the sound of raindrops signal rain (16.110). See also cc. 17, 25, 31, 42. Other signs seem to be arbitrary and easily dismissable, but it is probably best to keep an open mind (and wish for more help from students of animal behavior).<sup>101</sup>

<sup>100</sup> For magic, cf. F. Graf, *Magic in the Ancient World*, tr. F. Philip (Cambridge, Mass. 1997), c. 7, "Words and acts"; and for philosophy C. W. Müller, *Gleiches zu Gleichem: Ein Prinzip frühgriechischen Denkens* (Wiesbaden 1965).

<sup>101</sup> For a negative report on the ability of plants to foretell rain, see N. L. Silvester, "Notes on the behaviour of certain plants in relation to the weather," *Q. J. Royal Meteorological Soc.* 52 (1926) 15–24, who carefully observed several English plants, each of which was (and perhaps still is) credited in scientific literature as well as in popular lore with certain behavior before rain.

8) *Authorship reconsidered.* This study of weather literature has demonstrated how easily one basic text can be taken over by another and appear under this person's name as author. Thus, even a text compiled over a millenium after Aristotle can easily be recognized as belonging to this same tradition. Additions, subtractions, and minor alterations would not save any one of these works from a modern-day charge of plagiarism, but ancient standards applied to scientific, or at any rate factual, material were far more forgiving. Thus, although many ancient authors have been credited with authorship of *DS*, none can be proved. Before we present our theory below, equally unprovable, a brief survey of modern views of authorship is in order.

Although the Aldine printed *DS* as anonymous, credit for assigning it to Theophrastos seems to belong to Simon Grynaeus, who not only omitted it from his 1531 edition of Aristotle (*Ἀριστοτέλους ἅπαντα. Aristotelis ... opera ... omnia*. 2 vols. Basel: Joh. Bebelius. With a preface by Erasmus), he included it in the first book to claim to include all of Theophrastos (*Theophrasti ... opera, quae ... adhuc restant, omnia*. Basel 1541; see the bibliography for details), although it must be admitted that this is only an inference, as Gemusaeus, the author of the first preface, accepts Theophrastos as author without question or argument and without mentioning Grynaeus on this point. Camerarius, who wrote a new preface after Grynaeus' death of the plague shortly after publication, praised him for his work on the text, but, again, says nothing about Grynaeus specific views on *DS*. See Kley 29. All subsequent editors of this text have attributed it to Theophrastos without question: Furlanus, Heinsius, Schneider, Wimmer, Wood, and Hort (although Schneider seems to have been the last editor actually to examine mss., all subsequent editors have been happy to take his word for the readings). Theophrastos was accepted as its author by V. Rose, *Aristoteles Pseudepigraphus* (Leipzig 1863) 244–246. In time, however, questions as to authorship were raised. Böhme argued that the common source for both *DS* and Aratos was Eudoxos; see especially 50–83, although too much of his argument rests on supposed similarities in vocabulary between *DS* and Eudoxos, which is risky since for the latter we are dependent on later sources, who are likely to paraphrase or substitute more familiar synonyms, and in any case many of these words and astronomical terms (like διχοτομία, ἀνατολή, ἀκρόνυχος) are too common to use as criteria. Although we shall ourselves argue for an important place in the history of this text for Eudoxos, it has to be admitted that Böhme's case, as argued, is “gar nichts weiter als ein frommer Wunsch.”<sup>102</sup>

<sup>102</sup> Maass, in his review of Heeger, *GGA* (1893) 624.

Heeger sharply criticized Böhme for his elaborate stemma, but many of his arguments are equally weak. As we have already mentioned (see above, n. 12), he was willing to use any stylistic or scientific flaw as proof that *DS* could not be by Theophrastos, whose style was highly praised in antiquity; nor could it, in its present form, even be the work of a student of Theophrastos. This assumes that Theophrastos could not have had a student of whom he was not proud; Heeger's reasoning also ignores the ellipsis and stylistic flatness that comes with the prosaic catalogue form that one regularly finds in works from the Hippocratic corpus to Pliny and beyond. But since Heeger cannot deny the many links between *DS* and what we know of Aristotle's and Theophrastos' works on weather signs, he comes to conclude that some later person excerpted a Peripatetic work on the subject (22). Unknown he may be, but as just shown he may yet have himself been a Peripatetic, which would explain why the abridgement remained among in the Lyceum's library. Also arguing for Peripatetic authorship is Cronin "Authorship"; see below.

Heeger in turn was criticized by E. Maass in his review.<sup>103</sup> He bases his argument for Demokritos as ultimate author of *DS* in part on the basis of the combination of Ionian and poetic words found in both the presocratic and *DS*, but our knowledge of Demokritos' own language is severely limited and there can be no clear line drawn between ionian and poetic vocabulary. Others (including Sider) have already argued that Demokritos is an important figure in the history of weather treatises, but that does not necessarily make him a candidate for author of *DS*. The lack of uniformity in this treatise and its occasional use of a word that seems rather poetic for an (Athenian) treatise can be explained simply by its collective nature. Nonetheless, Maass is well aware that, however much he favors Demokritos, *DS* "will eine Materialsammlung aus älteren Quellen sein" (634).

A. Rehm later put forth Euktemon as author in *Parapegmastudien. Mit einem Anhang: Euktemon und das Buch De signis* (Munich 1941) 122–142 for the appendix. Since, however, there is little known about Euktemon's work, and what we do know points primarily to its being largely paraepigrammatic in form, Rehm has convinced nobody.<sup>104</sup> For the one passage in *DS* that reads like an entry in a paraepigma, see 30.206 πέμπτη καὶ δεκάτη ἀπὸ τροπῶν τῶν χειμερινῶν.

<sup>103</sup> Op. cit. 624–642. Heeger was later criticized in detail by Arrighetti, who argues that *DS* was composed by a learned Alexandrian. Regenbogen 1414 too would credit its current form to an Alexandrian, but he would not agree with Arrighetti's rather favorable assessment.

<sup>104</sup> Cf. Hannah, "Euctemon's paraepigma" (see above, n. 26).

With this in mind, a reasonable, if still not provable, transmission for the earlier part of the tradition is as follows:<sup>105</sup> (i) Aristotle, *Περὶ σημείων*, based on earlier works such as Demokritos', discusses (at least) short-term weather signs and suggests reasons for their validity, as well as discussing the nature of signs. The Aristotelian *Physiognomonika*, which is also concerned with signs, suggests the form that Aristotle's work on weather signs took: not a mere list but one concerned with the causes for each sign as well as with the varying nature of signs.<sup>106</sup> Aristotle's work on weather signs includes a section on the winds and an illustration of a wind-rose. (The extant *On the Locations and Names of the Winds* is either a selection or an abridgement of this; it is supplemented by *DS* cc. 35–6, which adds characteristic weather to, as the title indicates, location [= direction] and name.) Directly from Aristotle, and not long afterward, both (ii) Eudoxos and (iii) Theophrastos write their own works on weather signs,<sup>107</sup> the latter basing his work very much on Aristotle. The weather signs discussed by Eudoxos and Theophrastos would be largely the same, but each author would have put them in different context—Eudoxos in a work on the heavens that included a survey of the constellations (i.e., his *Phainomena*, whose plan Aratos followed), Theophrastos perhaps keeping closer to Aristotle. (iv) Aratos versifies Eudoxos' work (or sections) on the constellations and the weather signs (see above). (v) Someone strips Theophrastos work of its causes (just as, in this reconstruction, Aratos stripped Eudoxos' texts of any scientific context), leaving a carcass that is essentially *De Signis* as we have it in the mss. It probably still passed under the authorship of Theophrastos. Then, under a kind of Gresham's law, the bad (the abridged version) drives out the

<sup>105</sup> For the evidence for the existence and nature of each author given here, see above, section 4.

<sup>106</sup> It is worth noting that the *Physiognomonika* explicitly refers to the need by physiognomists to prepare a thorough collection of signs (*ἐκλογὴν τῶν σημείων*, 805a33; cf. 806a33) before writing one's work. The author of *Physiognomonika* acknowledges drawing upon such earlier collections (806a36).

<sup>107</sup> Aristotle names his older contemporary in the *Metaphysics* (991a17, 1073b17 = D 6 Lasserre and 1079b21 = D 1) and in the *Ethics* (1101b28 = D 4 and 1172b9 = D 3). (Eudoxos is named also in [Arist.] *Mir. Aus.*) There was sufficient overlap of their lives, however, for Eudoxos (born 392–84) to have read, learned, and borrowed from Aristotle (born 387); that is, say, from ca. 365 to Eudoxos' death ca. 339–31. For this date for Eudoxos' birth, which is later than that usually assigned, cf. H.-J. Waschkies, *Von Eudoxos zu Aristoteles* (Amsterdam 1977), ch. 2 "Die biographischen Daten des Eudoxos von Knidos," who makes a convincing case. In part his argument depends upon conjecturing for *Vita Arist. Latina* 11 *tempore Eudoxi*, which makes little sense, the archon year ἐπὶ Εὐβούλου (345/4). (We thank D. Hutchinson for the reference to Waschkies.)

good (the original, containing signs and causes), becoming the only version maintained in the Lyceum's library. How this could have happened is unfortunately all too easy to imagine, so many displacements, loss, and misattribution did the Lyceum's library experience.<sup>108</sup>

The one question remaining is how to consider the new work in relation to that of its Theophrastean model, as a new work with a separate author, even if only Anon.; or as largely an abridgement of Theophrastos and so still to be included in his corpus. If, however, modern scholarship is content to refer to the anonymous prosification of Dionysios Periegetes' poem *De Aucupio* as a work of Dionysios,<sup>109</sup> it should be equally willing to refer to a mere prose abridgement of Theophrastos' *Περὶ σημεῖων* as his work.

9) *Textual tradition.* In total there are thirteen Greek manuscripts extant from the second half of the thirteenth century till the second half of the sixteenth century containing the text of *De Signis*, all but one of which the two editors have autopsied.<sup>110</sup> A census of the Theophrastean manuscripts was prepared by N.G. Wilson, references to which will be given below.<sup>111</sup> There is, furthermore, a medieval Latin translation by Bartholomaeus of Messina (*Bart.*), the mss. of which we ourselves have not examined,<sup>112</sup> although this translation is of great interest for the recensio of *DS*. Made for King Manfred of Messina, who ruled from 1258 till 1266, *Bart.*'s Latin translation is with some probability older than the oldest extant Greek manuscript, Marc. IV.58 from the second half of the thirteenth century. As *Bart.* translated "verbum e verbo,"<sup>113</sup>

<sup>108</sup> Cf. F. Grayeff, *Aristotle and his School* (London 1974), c. 4, "The Library of the Peripatos and its history."

<sup>109</sup> The prose version cited here was most likely based on a didactic poem of unknown title by Dionysios the Periegete (1st–2nd cent. AD), as is briefly but convincingly argued by his Teubner editor A. Garzya, "Sull'autore e il titolo del perduto poema 'Sull'Aucupio' attribuito ad Oppiano," *GIF* 10 (1957) 156–160.

<sup>110</sup> The exception is Harv. 17, permission to view which was denied to D.S.

<sup>111</sup> N. G. Wilson, "The Manuscripts of Theophrastus," *Scriptorium* 16 (1962) 96–102.

<sup>112</sup> Edited by W. Kley, *Theophrasts Metaphysisches Bruchstück und die Schrift Περὶ σημεῖων in der lateinischen Übersetzung des Bartholomaeus von Messina*. Diss. Berlin 1936. *Bart.*'s translation of the *Physiognomonika* had earlier been edited by R. Foerster, *Scriptores Physiognomonici Graeci et Latini*, vol. I (Leipzig 1893) L–LII.

<sup>113</sup> For more details in general see B. Schneider, *Die mittelalterlichen griechisch-lateinischen Übersetzungen der Aristotelischen Rhetorik* (Berlin 1971) 15–29.

his Latin wordings should be considered for the *restitutio textus*.<sup>114</sup> We accordingly cite *Bart.* along with the two main Greek witnesses for the text of *DS* in the apparatus criticus.

**M** Venice. Marc. IV.58

2<sup>nd</sup> half 13<sup>th</sup> cent.      parchment

*DS*: ff. 26-33 (περὶ σημείων ὑδάτων καὶ πνευμάτων)

Wilson: no. 54

Lit.: Mioni *Aristotelis Codices* 149 f.<sup>115</sup>      Mioni *Cod. Gr.* 247<sup>116</sup>      Harlfinger-Reinsch  
46-49<sup>117</sup>      Harlfinger *Mir.* 63 f.<sup>118</sup>      Vogt 213

Codex M is the oldest extant Greek manuscript of *DS*, written in the second half of the 13<sup>th</sup> century by Gerasimos Monachos, as first identified by Elpidio Mioni.<sup>119</sup> *DS* along with *Physiog.* and *De Vent. Situ* form a distinct group in the manuscript tradition. A. Diller<sup>120</sup> assumed that the common textual tradition of *Physiog.* and *DS* on the one side and *De Vent. Situ* on the other side were joined for the first time in M. *De Vent. Situ* was taken from Par. Suppl. 443A (or a predecessor), a codex containing minor geographers. Harlfinger-Reinsch 44 n. 32, arguing against Diller's position, maintained that it is unlikely that the copyist of M would have found as small a work as *De Vent. Situ* in this large collection of geographers. Perhaps so — it should be noted, however, that there is some evidence for the linking of *Physiog.* and *DS* prior to M. The pinax (table of contents) of the 10<sup>th</sup>-century Par. 1741 lists these two titles, although the folios containing these works are now missing.

<sup>114</sup> For Arist. *Physiog.* see S. Vogt, *Aristoteles: Physiognomonica* (Berlin 1999) 218 f., hereafter cited Vogt; for [Arist.] *Probl.* see R. Seligsohn, *Die Übersetzung der ps.-aristotelischen Problemata durch Bartholomaeus von Messina*, Diss. Berlin 1934 and H. Flashar, *Aristoteles: Problemata Physica* (Berlin 1962, 4<sup>th</sup> 1991) 373 f.

<sup>115</sup> E. Mioni, *Aristotelis Codices Graeci qui in Bibliothecis Venetiis adservantur*, Padua 1958.

<sup>116</sup> E. Mioni, *Bibliothecae Divi Marci Venetiarum. Codices Graeci Manuscripti*, vol. I.2, Rome 1972.

<sup>117</sup> D. Harlfinger and D. R. Reinsch, "Die Aristotelica des Parisinus Gr. 1741. Zur Überlieferung von Poetik, Rhetorik, Physiognomonik, De signis, De ventorum situ," *Philologus* 114 (1970) 28–50.

<sup>118</sup> D. Harlfinger, "Die handschriftliche Verbreitung der Mirabilia," in H. Flashar, *Aristoteles, Mirabilia*. (Berlin 1972) 62–66.

<sup>119</sup> Mioni *Aristotelis Codices* 149. Gerasimos Monachos copied ff. 1–194.

<sup>120</sup> A. Diller, *The Tradition of the Minor Greek Geographers* (New York 1952) 40 f.

M is an independent witness for *DS* and is a hyparchetype for many other manuscripts, which will be described below. This manuscript may have been brought to Italy by Giovanni Aurispa after his second stay in Constantinople in 1421-23.<sup>121</sup> In any case, among the 238 Greek codices imported in the year 1423, which Aurispa described in a letter as having been written by “very important authors,”<sup>122</sup> are included several Aristotle manuscripts, e.g., Laur. 81.15, Laur. 81.20, and Vat. 1580. We can not be certain, however, that M was included in this particular group.

Vatican City. Vat. gr. 2231

V

1<sup>st</sup> half 14<sup>th</sup> cent.      paper

*DS*: ff. 269–274 (ἀριστοτέλους)

Not in Wilson

Lit.: S. Lilla, *Codices Vatican Graeci. Codices 2162–2254 (Codices Columnenses)*, Vatican City 1958      Harlfinger-Reinsch 49 f.

V is a second independent witness, written in the first half of the 14<sup>th</sup> century. On the basis of the watermarks, the volume as a whole can be dated more specifically to the years between 1320 and 1340, although no watermark serves to date *DS* itself. Although Vat. 2231 has recently been described for another manuscript contained therein,<sup>123</sup> its value for the reconstitution of *DS* was first recognized by Harlfinger-Reinsch 49 f. Vat. 2231 also contains the text of the *Carmen aureum* with a commentary, both in a more diligent and comprehensive version than that written by the scribe Ioannes Grammaticus in the year 925, now Vind. phil. gr. 314.

The tradition of *DS* represented solely by V idiosyncratically often omits passages contained in the M tradition or contains passages omitted by M.<sup>124</sup> Furthermore, it concludes several chapters short of the end and

<sup>121</sup> See D. Harlfinger, *Die Textgeschichte der pseudo-aristotelischen Schrift ΠΕΡΙ ΑΤΟΜΩΝ ΓΡΑΜΜΩΝ. Ein kodikologisch-kulturgeschichtlicher Beitrag zur Klärung der Überlieferungsverhältnisse im Corpus Aristotelicum* (Amsterdam 1971); hereafter cited *Textgeschichte*.

<sup>122</sup> “... gentiliū auctorum”: see R. Sabbadini, *Carteggio di Giovanni Aurispa* (Rome 1931) xvii.

<sup>123</sup> F. W. Köhler, *Textgeschichte von Hierokles' Kommentar zum Carmen aureum der Pythagoreer*. Diss. Mainz 1965.

<sup>124</sup> The signs omitted have to do with mountains (cc. 20, 22, 24), stars and nebulae (cc. 23, 41, 43, 46, 51), mist (c. 52), clouds (c. 24), and a series of sea- and landbirds (cc. 28, 39, 40).



at the very bottom of its page, with the comment “καὶ ταῦτα μὲν παρὰ τῶν καθόλου παρατηρήσεων ἡμεῖς γεγράφαμεν ὧδε: +”. These differences are in line with the general observation that technical treatises of all sorts are subject to revisions in order to make them more useful and beneficial.<sup>125</sup>

In several places V preserves the correct text in opposition to M and in general proves itself to be a superior witness for *DS*. Unlike M and many of its descendents, V does not contain *Physiog.* and *De Vent. Situ*.

There are hints that lead to the assumption that V or a now-lost manuscript of the V-tradition was used for a redaction of the Latin translation, as may indicate e.g. the omissions 41.299–300 ἐν δὲ τῷ Πόντῳ ... νέμεσθαι (together with *Bart.F*); 44.328–9 ἐὰν ... λιμός (together with *Bart.F*) and the readings 41.299 σημαίνουσιν V *Bart.* : σημαίνει M *Bart.GE*; 47.345 χειμῶνων μεγάλων M *Bart.* : μεγάλων χειμῶνων V *Bart.P*. But this is not the place to argue in depth for the transmission of the Latin translation.

The remaining manuscripts and the Aldine edition are all in the M family. The following three manuscripts descend directly from M.

S Venice. Marc. gr. 216

AD 1445 paper

*DS*: ff. 22–33 (περὶ σημείων ὑδάτων καὶ πνευμάτων τοῦ ἀριστοτέλους)

Wilson: no. 50

Lit.: Mioni *Aristotelis Codices* 132 f. Harlfinger-Reinsch 47–9 Harlfinger  
*Textgeschichte* 283–4 Harlfinger *Mir.* 63 f. Mioni *Thes. Ant.* 330f.<sup>126</sup> Vogt 213

Marc. gr. 216 was transcribed, as was first described by Wilson 101, by Ioannes Skutariotes in the year 1445 at the request of Cardinal Bessarion, as Bessarion himself spelled out on the first free endpaper, along with the date November 4, 1445. Foerster<sup>127</sup> had already demonstrated that for *Physiog.*, S descends from M, which is also the case for *DS*.

<sup>125</sup> See Ann E. Hanson, “Fragmentation of the Greek medical writers,” in G. W. Most (ed.), *Collecting Fragments / Fragmente sammeln* (Göttingen 1997 = *Aporematata* 1) 289–314.

<sup>126</sup> E. Mioni, *Thesaurus Antiquus*, vol. I: *Codices 1–299*, (Rome 1981).

<sup>127</sup> R. Foerster, *De Aristotelis quae ferunter physiognomonicis recensendis*, Kiel 1882, and id., *Scriptores Physiognomonicis* (Leipzig 1893).

Paris. Par. gr. 2048

**B**

2<sup>nd</sup> half 15<sup>th</sup> cent. paper

*DS*: ff. 73-84<sup>v</sup> (ἀριστοτέλους φυσιογνωμονικά [sic] : περὶ σημείων  
ὑδάτων καὶ πνευμάτων)

Not in Wilson

Lit.: Omont II 184<sup>128</sup> Harlfinger-Reinsch 48 f.

It is noteworthy that in B *Physiog.* does not precede *DS* as is the case in M. It is likely that the copyist contaminated the *explicit* of *Physiog.* from M with the *incipit* of *DS*. Perhaps, therefore, considering *DS* as part of *Physiog.*, he chose this last title as the title for the two works together. The unidentified copyist reproduced the handwriting of his exemplar M as accurately as he could, but often, not understanding M's compendia and other peculiarities, was led into error. For example, note his version of the title, given above; he also misread M's minuscule beta as a mu. He was also prone to common errors of iotacism and other phonological errors, such as confusion of kappa and chi. A later hand corrected some of B's errors and noted omissions in the margin.

Paris. Par. gr. 1893

**P**

before 1497 paper

*DS*: ff. 145<sup>v</sup>-152<sup>v</sup> (περὶ σημείων ὑδάτων καὶ πνευμάτων)

Wilson: no. 28

Lit.: Omont II 159 f. Harlfinger-Reinsch 45-7 Harlfinger *Textgeschichte* 415  
Hoffmann 79-82<sup>129</sup> Sicherl 76 f.<sup>130</sup> Vogt 216

*DS* in P was written and corrected by the same scribe who wrote *DS* in H (see below). The ductus of ff. 135-196 is close to that of a Paulos in Vat. gr. 1046, who might be Paolo Bombasio (see Harlfinger-Reinsch 45-47, 50). P and H were written in the same pale ink on the same paper, as is shown by the common watermarks,<sup>131</sup> and agree in almost every other detail, such as line numbers per page (see Sicherl 77).

<sup>128</sup> H. Omont, *Inventaire sommaire des manuscrits grecs de la Bibliothèque Nationale. Ancien fonds grec*, vol. II, codd. 1319-2541, Paris 1888.

<sup>129</sup> P. Hoffmann, *Un mystérieux collaborateur d'Alde Manuce: L'Anonymus Harvardiensis*, Rome 1985 = *Mélanges de l'École Française de Rome*, 97.

<sup>130</sup> M. Sicherl, *Griechische Erstaussagen des Aldus Manutius. Druckvorlagen, Stellenwert, kultureller Hintergrund*, Paderborn 1997.

<sup>131</sup> Ch. M. Briquet, *Les filigranes. Dictionnaire historique des marques du papier dès leur apparition vers 1282 jusqu'en 1600 avec 39 figures dans le texte et 16.112 facsimilés de*

P was corrected by the scribe himself, e.g. 1.3 (not in the apparatus criticus) παρ'] περὶ *in textu*, παρὰ *in marg.*; 2.8 οἱ εἰ *in textu*, οἱ *in marg.*; 3.15 Κυνός] κῶνός; 4.27–8 Μέτων] μέν των *in textu*, μέτων *in marg.*; 8.53 νομηνίας] ὄμηνίας. These corrections were mostly taken over by the copyist when he wrote H (see below).

Ff. 135–196 originally formed a book in itself, consisting of eight quaternions (α–η), which contained *Physiog.*, *DS*, *De Vent. Situ*, and the Ἱατρικὰ ἀπορήματα ascribed to Alexander of Aphrodisias.

## H Harvard. Harv. 17

before 1497      paper

*DS*: ff. 154<sup>rv</sup> (περὶ σημείων ὑδάτων καὶ πνευμάτων)

Wilson: no. 9

Lit.: S. de Ricci and W. J. Wilson, *Census of Medieval and Renaissance Manuscripts in the United States and Canada*, vol. I. (New York 1935) 971 ff. J. M. Whitehead, "Fifth century manuscripts of Aristotle," *Harvard Library Notes* 28 (1938) 143 f. C. U. Faye and W. H. Bond, *Supplement to the Census of Medieval and Renaissance Manuscripts in the United States and Canada* (New York 1962) 233b–234a AG 110–117<sup>132</sup> Harlfinger-Reinsch 45–7 Harlfinger *Textgeschichte* 415 Hoffmann 76–9 Sicherl 74–8 Vogt 216

H is a direct copy of P by the same scribe, made soon afterwards (this can be concluded on codicological grounds, e.g. ink color and watermarks; see above) after the corrections in P were inserted, as may be obvious from 3.15 Κυνός]: κῶνός P *post corr.*, Κυνός H. Not all corrections in P were taken over by H, e.g. 4.27–8 Μέτων] μέν των *in textu* PH, μέτων *in marg.* P. In other words H is the "Reinschrift" of the "Arbeitsexemplar" P.

As H contains only one folio of *DS*, f. 154<sup>rv</sup> (from the beginning, to 6.40 ληπτέον), *Physiog.* must be used to help determine its stemmatic relationship. For connective errors between H and P and their separative errors see Harlfinger-Reinsch 45 f.

H was the copytext for the Aldine of 1497 and contains many printers' marks as well as many ink smudges; see the apparatus criticus to

*filigranes* (Geneva 1907, Leipzig <sup>2</sup>1923) no. 2592. D. Harlfinger, "Zur Datierung von Handschriften mit Hilfe von Wasserzeichen," in D. Harlfinger (ed.), *Griechische Kodikologie und Textüberlieferung* (Darmstadt 1980) 144–169, has demonstrated it is rare for one watermark to be in use for more than eight years.

<sup>132</sup> P. Moraux et al. *Aristoteles Graecus: Die griechischen Manuskripte des Aristoteles*. Vol. 1. *Alexandrien-London*. Berlin 1976.

34.244 for Ἀθως and 46.338 Ἡλιος, where it would seem that ink had obliterated these words before the text was printed. Between the end of *Physiog.* and the beginning of *DS* the number I 13 appears, which was marked through by the Nuremberger Dominican Johannes Cuno (1463–Feb. 21, 1513), and over which he wrote „revisus et correctus a f(ratre) Jo Cuno patavii 1509.” Sicherl 75 correctly reasoned that Cuno did not make his corrections and additions for the press, but rather that he took these from the Aldine and inserted them into H. According to Moraux,<sup>133</sup> Ioannes Gregoropulos, who acted as supervisor of Aldus’ Greek texts, took home some gatherings of H, which otherwise would have been destroyed.<sup>134</sup> Gregoropulos, who also earned money as a teacher of Greek, evidently passed on these pages to Cuno, who was one of his students. Cuno had very likely arrived in Italy before September 29, 1504, in order to improve his Greek. He would have come into the possession of these detached folios of H no later than 1507, a date he wrote on a page of H containing Ps.-Galen, *De Philosophiae Historia* (ff. 155–173), which, like *DS*, also appeared in the second volume of the Aldine.

Milan. Ambr. P 34 sup.

C

after 1497      paper

*DS*: ff. 200<sup>v</sup>-213 (ἄριστοτέλους περὶ σημείων ὑδάτων καὶ πνευμάτων)

Wilson: no. 18

Lit.: Martini-Bassi 2.704-5<sup>135</sup>  
*Textgeschichte* 75

Harlfinger-Reinsch 45, 49 n. 47  
Vogt 217

Harlfinger

C was written towards the end of the 15th or the very beginning of the 16th century (see above on H) by Raphael Regius as identified by Lobel.<sup>136</sup> The *terminus ante quem* can be determined on the basis of the connective errors of both C and *Ald.*, which, at least for *Physiog.*, since the one folio in H is insufficient to establish the filiation of *DS*, are

<sup>133</sup> See AG 114-5 with further references.

<sup>134</sup> As Aldus says in his preface to volume 2 of his Aristotle-edition (see below), there was no longer any need to keep the now ink-stained exemplars.

<sup>135</sup> A. Martini and D. Bassi, *Catalogus Codicum Graecorum Bibliothecae Ambrosianae*, Milan 1906.

<sup>136</sup> On Regius see E. Lobel, *The Greek Manuscripts of Aristotle's Poetics*, (Oxford 1933 = Transactions of the Bibliographical Society, Suppl. 9) 12 f.; E. Cosenza, *Biographical and Bibliographical Dictionary of the Italian Humanists and of the World of Classical Scholarship in Italy, 1300–1800* (Boston 1962) 4.3017-21.

peculiar errors of H (see Harlfinger-Reinsch 45 for examples). The separative errors between C and *Ald.* indicate that C was written before the corrections in *Ald.* were added to H by Cuno. Since he took H with him when he left for Basel in 1510, C must have been written before this date (maybe before H came into possession of Cuno, i.e. before 1507). Furthermore, this explains why C does not contain the changes made by Cuno. (We have no indication that anyone other than Cuno made changes in H.)

It is interesting to note that C is – along with, e.g., Par. gr. 1861 with 17 treatises or Lips. 24 with *EN*, *Pol.*, *Oec.*, and *Rhet.* – one of the few manuscripts at the end of the 15<sup>th</sup> and during the 16<sup>th</sup> century which, after the arrival of inexpensive printed books,<sup>137</sup> continued the practice of arranging its contents according to specific topics, such as logic, physics, zoology and biology, or ethics.

**Ald.** Aldus Manutius, with the aid of Alexander Bondinus. [Works of Aristotle, Theophrastus, and others.] 5 vols. Venice 1495-98: Aldus Manutius.

*DS*: Vol. 2 (1497) ff. 261<sup>r</sup>-267<sup>r</sup>.

The first great work that came from the press of Aldus Manutius in Venice was the five-volume editio princeps of Aristotle and Theophrastus, published 1495-98.<sup>138</sup> The *Poetics* and the *Rhetoric* were not included; the *Characters* of Theophrastus were not published until 1527 by Willibald Pirckheimer in Nuremberg and the first attempt to print all the works of Theophrastus was the edition of Symon Grynaeus in 1541; see the bibliography for details of this latter volume. With this publication, Aldus hoped to satisfy the growing need for the works of Aristotle, which resulted from the establishment of Europe's first chair for the study of Aristotle at the University of Padua in 1497.

Volume two of the Aldine contains, after some lives of Aristotle and Theophrastus, five works of Aristotle (including *De Mundo*) and the *De Mundo* of Philo. The volume concludes with three works indisputably by

<sup>137</sup> A printed book cost about 1/5 to 1/8 the price of a manuscript; see F. Milkau and G. Leyh, *Handbuch der Bibliothekswissenschaften*, 2<sup>nd</sup> edition, vol. 1: *Schrift und Buch* (Wiesbaden 1952) 876.

<sup>138</sup> On Aldus in general see, in addition to Sicherl, M. Lowry, *The World of Aldus Manutius: Business and Scholarship in Renaissance Venice*, Oxford 1979; G. Fletcher, *New Aldine Studies: Documentary Essays on the Life and Work of Aldus Manutius*, San Francisco 1988.

Theophrastos and with *DS*. In the table of contents, the order of the last four works are: Theophrasti de igne, liber unus / Eiusdem de Ventis liber unus / De signis aquarum & uentorum, incerti auctoris / Theophrasti de lapidibus, liber unus. In the volume itself, however, not only is the order of the last two reversed, but in addition *De Vent. Situ* has been added, without any separate title, to *DS* on ff. 267<sup>rv</sup>, and without any other indication that it is a separate work. Furthermore, although generally throughout *DS* and *De Vent. Situ* the page headings refer to the various chapters of *DS*, exceptionally the heading on fol. 265<sup>v</sup> is Θεοφράστου, which is the Aldine's heading throughout the three other Theophrastean works in this volume. Since, moreover, the heading Θεοφράστου also appears on the last page of *De Lapidibus*, a verso immediately facing the first page of *DS*, where the title alone introduces the new work, the reader who does not go back to the table of contents may be forgiven for thinking that *DS* is a work by Theophrastos, as in fact the scribe of L did (see below).

Vatican City. Vat. Reg. gr. 123

L

after 1497      paper

*DS*: ff. 330<sup>v</sup>-339<sup>v</sup> (no title)

Wilson: no. 42

Lit.: H. Stevenson, *Codices Manuscripti Graeci Reginae Suecorum et Pii PP. II* (Rome 1888) 87 f. Harlfinger-Reinsch 48 Harlfinger *Textgeschichte* 74

L was written some time after 1497, probably in the 16<sup>th</sup> century, copied from the Aldine (as were Vat. Reg. 124 und 125) by a copyist who was obviously not Greek. As noted by Harlfinger *Textgeschichte* 74, L reproduced the arrangement of the second volume of the Aldine (Reg. 124 and 125 reproduced the arrangement of the fourth and fifth volumes, respectively). Noteworthy are the scribe's many attempts to imitate Aldus' compendious sorts, such as παρά and καί. Even more interesting is the fact that this is the only manuscript to identify the author of *DS* as Theophrastos; see above, on *Ald*. In L, *DS* begins on the bottom third of fol. 330<sup>v</sup>. Every verso of *DS* has as heading Θεοφράστου δ, which suggests that the scribe of L considered *DS* to be the fourth work by Theophrastos in the second volume of the Aldine (see above). That this scribe had the Aldine in front of him is further indicated by the fact, that his headings of the recto pages repeat the subheadings of the Aldine (with one exception, that he has added περὶ βορροῦ on his own).

**Q** Venice. Marc. gr. 200

AD 1457 parchment

*DS*: ff. 293<sup>v</sup>-296<sup>v</sup> (Ἀριστοτέλους περὶ σημείων ὑδάτων καὶ πνευμάτων χειμῶνος καὶ εὐδίας)

Wilson: no. 47

Lit.: Mioni *Aristotelis Codices* 113-115 Harlfinger-Reinsch 48 f. Harlfinger *Textgeschichte* 71, 183-187 Harlfinger *Mir.* 63 Mioni *Thes. Ant.* 311-313 Vogt 214

Q was written in an elegant hand in 1457 (completed on July 15) by Ioannes Rhosos, who was commissioned to do so by Cardinal Bessarion, whose subscription appears on fol. 594. An impressive folio volume which, alone of Aristotle manuscripts, contains all of his works other than the *Organon*. The text of *DS* was copied from S, as were those of N and F (see below).

Rhosos copied a complete series of treatises out of S: *Physiog.*, *DS*, *De Vent. Situ*, *Mirabilia*, *De Mundo*, *MXG*, *Mechanika*.<sup>139</sup> This manuscript together with S and Marc. 212 belong to a group commissioned by Bessarion primarily intended merely to preserve and make available all the works of Aristotle. N on the other hand, belongs to a group of later manuscripts (Marc. 206, 207 and 213) in which Bessarion took the time to make editorial changes.<sup>140</sup> Although his skills as copyist were later to improve, here Rhosos shows a tendency to make some careless errors, cf. Harlfinger *Textgeschichte* 274.

**N** Venice. Marc. gr. 215

between 1465 and 1472 parchment

*DS*: ff. 193-198 (περὶ σημείων ὑδάτων καὶ πνευμάτων τοῦ ἀριστοτέλους)

Wilson: no. 49

Lit.: Mioni *Aristotelis Codices* 131 Harlfinger-Reinsch 47 f. Harlfinger *Textgeschichte* 72, 309-11 Harlfinger *Mir.* 63 f. Mioni *Thes. Ant.* 329 Vogt 215

N, written between 1465 and 1472, was also commissioned by Bessarion and remained in his possession, as an autograph exlibris shows.

<sup>139</sup> Cf. Harlfinger *Textgeschichte* 191.

<sup>140</sup> Cf. Harlfinger *Textgeschichte* 71 f.

Four copyists produced the volume, none of whom signed his name, although Harlfinger *Textgeschichte* 310 has identified the first as Demetrios Triboles (ff. 1-35<sup>v</sup>) and the scribe of the following folios (36-185) as the so called Anonymus K(amariotes) B(essarion).

If we may assume, as seems obvious, that N was written in Rome, the span of time in which it was produced can be limited to that between 1465 and 1472, for Bessarion died on November 18, 1472, and Demetrios Triboles was in Greece at least until 1465.

On the basis of shared errors it can be shown that N and F are cognate, dependend on a now-lost predecessor.

Florence. Laur. 57.33

**F**

3<sup>rd</sup> quarter 15<sup>th</sup> cent.      paper

*DS*: ff. 88<sup>v</sup>-96<sup>v</sup> (no title)

Not in Wilson

Lit.: Bandini II.385-7      Harlfinger-Reinsch 49      *AG* 203-205      Vogt 215

On the basis of watermarks in the shape of either a horn or the letter S with a cross,<sup>141</sup> F can be dated to the third quarter of the 15<sup>th</sup> century. Two different hands can be distinguished; the change from one to the other occurring, strangely enough, in the middle of a work, [Aristotle] *De Virtute* (fol. 151<sup>v</sup>/152).

For the filiation (F and N depend upon a common predecessor now lost on M) see Harlfinger-Reinsch 49.

Milan. Ambr. A 174 sup.

**A**

ca. 1470      paper

*DS*: ff. 21<sup>v</sup>-27 (no title)

Wilson: no. 17

Lit.: Martini-Bassi 1.80<sup>142</sup>      Harlfinger-Reinsch 47, 49      Harlfinger *Textgeschichte* 271-273, 414      Harlfinger *Mir.* 64      Vogt 215

<sup>141</sup> Horn, similar to Briquet 7693; letter S with cross, similar to Briquet 9056; see *AG* 203-4.

<sup>142</sup> A. Martini and D. Bassi, *Catalogus Codicum Graecorum Bibliothecae Ambrosianae* (Milan 1906).



A was written in the 15<sup>th</sup> century for the most part<sup>143</sup> by a copyist, whom Harlfinger, *Textgeschichte* 272 considers “unzweifelhaft identisch” with the scribe named elsewhere by Constantine Lascaris, in Matr. 4676, as a certain Manuel μαθητής.

This Manuel, who had written other Madrid manuscripts either for or together with Lascaris,<sup>144</sup> belonged to his circle at least as early as Lascaris’ Milan period (1458–65). Manuel must also have spent some time in Rome, as a subscription in the hand of Lascaris in Matr. 4636 demonstrates: Μανουήλ ἐν Ῥώμῃ ἐξέγραψε.<sup>145</sup>

Other parts of A were written by Ioannes Rhosos,<sup>146</sup> who copied *DS* in Q (see above). The most likely place of copying the manuscript was Rome, as has been demonstrated by Harlfinger *Textgeschichte* 273, on the basis of the watermark (horn with cross, very similar to Briquet 7834), which is also found in two manuscripts, written in Rome in 1471 by Rhosos (Par. 1910 and Laur. 55.9). It is possible that A was produced under the calligraphic supervision of Rhosos, who wrote the first pages of several of the works in A himself, probably to set the format for Manuel, and who participated in copying the rest only in brief passages, while Manuel copied the rest.

This manuscript at first glance seems to be a immediate copy of S, but collation of *DS*’ sister texts *Physiog.* and *De Lineis* in A and in Vind. phil. 231<sup>147</sup> shows that there was an intermediary copy; Vind. phil. 231 originally contained *DS*, as can be seen from the table of contents, but *DS*, along with the conclusion of *Physiog.* and a significant part of *De Vent. Situ*, were lost when three quaternions and three folios went astray and were presumably destroyed.<sup>148</sup>

Moreover, since Emmanuel, the otherwise unknown scribe of Vind. phil. 231 dated the subscription to January 20, 1458, we now have a *terminus ante quem* for the lost exemplar. Its *terminus post quem* is November 4, 1445, the completion date of its exemplar S.

<sup>143</sup> These are ff. 3–8<sup>v</sup>, 17–99, 103–157<sup>v</sup>, 183–208<sup>v</sup>, 219–338; see Harlfinger *Textgeschichte* 414.

<sup>144</sup> „κόπος καὶ κτῆμα Κωνσταντίνου Λασκάρεως ... τὸ μὲν ἐξ αὐτοῦ, τὸ δὲ ἐκ Μανουήλου μαθητοῦ”; cf. Harlfinger *Textgeschichte* 272 with nn. 1–2.

<sup>145</sup> Cf. Harlfinger *Textgeschichte* 273.

<sup>146</sup> As Martini-Bassi 1.80 had correctly seen earlier, Rhosos copied ff. 1–2<sup>v</sup>, 9–16<sup>v</sup>, 99 (middle of the page)–102<sup>v</sup>, 158–182 and 209–218<sup>v</sup>.

<sup>147</sup> For a shortlist with further references see Vogt 214.

<sup>148</sup> See Harlfinger *Textgeschichte* 282 with n. 2; see further 274–282 on the cultural background of this interesting manuscript.

Turin. B.II.18

T

2<sup>nd</sup> half 16<sup>th</sup> cent. paper

*DS*: ff. 262-272<sup>v</sup> (περὶ σημείων ὑδάτων καὶ πνευμάτων, χειμῶνων καὶ εὐδιῶν)

Not in Wilson

T was written in the second half of the 16<sup>th</sup> century by Nikolaos Choniates. In terms of the readings, T is in the M family, but either Choniates or a predecessor thoroughly rearranged the order of signs after c. 10 according to the bearer of signs (such as moon, sun, halo etc.), and omits, besides single words or two-word phrases, these passages:

25.173-4 δεῖ ... γενομένοις; 26.176-178 ὕδατος ... τάδε (together with *Bart.Z*); 29.202-3 ἐὰν ... μεταβάλλει (together with *Bart.P*); 30.206-211 ἡ πέμπτη ... δεξιόν (together with *Bart.T*); 33.237-8 σελήνης ... πνεύματα (together with C *Ald. L*); 34.244-5 Ἄθως ... πολλά (together with V); 34.247-8 μετὰ χιόνα ... σημαίνουσιν; 40.289-90 καὶ σπίνος ... χειμῶνα (together with V); 41.299-300 ἐν δὲ τῷ Πόντῳ ... νέμεσθαι (together with V *Bart.F*); 42.307 καὶ ... χειμέριον; 42.909-10 λύχνος ... χειμέρια; 44.328-9 ἐὰν ... λιμός (together with V *Bart.F*); 49.358-60 καὶ ... εὐδίαν; 53.389-92 καὶ ... σημαίνει; c. 57 in total.

As T agrees with PC *Ald. L* in all omissions (for the bigger one see above 33.237-8)<sup>149</sup> and many other readings but goes together with *Ald. L* in errors and significant readings against PHC (e.g. 14.92 ὡς ἂν MV *Bart.*] ὡς ἐὰν PC : ἧς ἐὰν *Ald. LT*), it is obvious that T is in close relation to *Ald.* (and T) and that the omissions shared with V (and *Bart.*) must be somewhat a coincidence and are most probably due to the rearrangement of the signs. As is the fact that the last sentence of T is the same as the last sentence of V (54.397; see above), although virtually everything between this last sentence and c. 57 is contained in T somewhere or other.

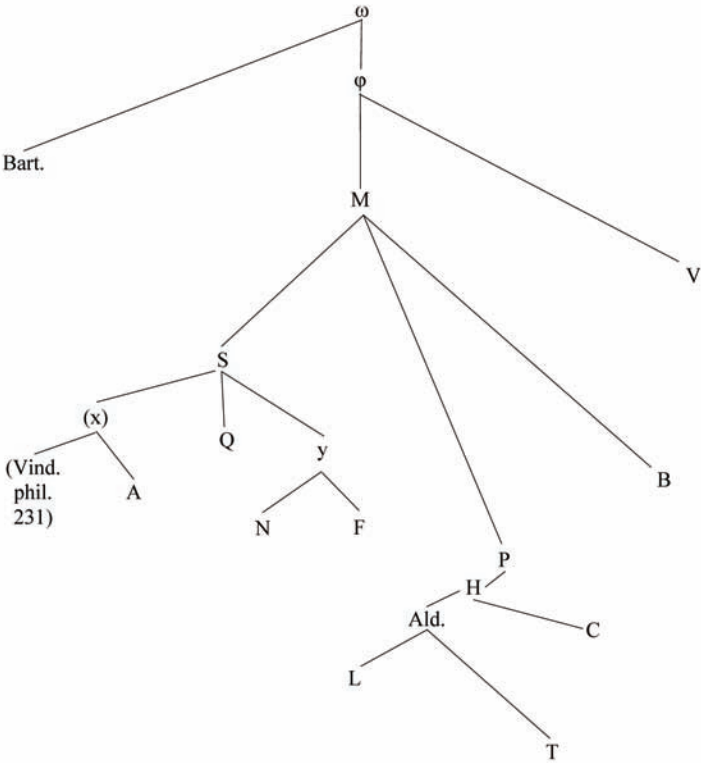
As a brief example of T's rearrangement, note the following ordering, in terms of the line numbers of our text, immediately after c. 10: 60-70, 158-9, 314-9, 153-8, 74-6, 129.

As T is an apographon (and most probably from a printed edition), in the apparatus criticus we do not indicate where in the manuscript the reading in fact occurs, nor do we record omissions or singular readings of T.

<sup>149</sup> That B also omits it means little or nothing as B is a direct copy of M and omits some other sentences we find in T in accordance with the rest of the M-filiation. This omission might be due to "Fehlerkoinzidenz", on which see Harlfinger *Textgeschichte* 18-25.

Filiation

The textual relationship among the manuscripts has been solidly established by Harlfinger-Reinsch. The stemma below is based on theirs for the M-tradition, omitting those mss. that do not contain *DS* and adding V, T and *Bart.* For detailed lists of readings of the Greek manuscripts that established the stemma we refer the reader to Harlfinger-Reinsch. In the case of “Überlieferungsgemeinschaft” with *Physiog.* the stemma was recently affirmed by Vogt 221-226.



## TEXT AND TRANSLATION

## CONSPECTUS SIGLORUM

- M = Marcianus Gr. IV.58; s. 13  
V = Vaticanus Gr. 2231; s. 14  
*Bart.* = versio Latina Bartholomaei; s. 13

Raro citantur:

- S = Marcianus Gr. 216; a. 1445  
B = Parisinus Gr. 2048; s. 15  
P = Parisinus Gr. 1893; s. 15  
A = Ambrosianus A 174 sup.; s. 15  
Q = Marcianus Gr. 200; a. 1457  
N = Marcianus Gr. 215; s. 15  
F = Laurentianus Gr. 57.33; s. 15  
H = Harvardianus 17; s. 15  
C = Ambrosianus P 34 sup.; s. 15  
L = Vaticanus Reg. Gr. 123; s. 16  
T = Taurinensis B.II.18; s. 16

- Ald. = editio Aldina, Venice 1497  
Bonav. = F. Bonaventura, *Anemologiae pars prior* ..., Urbino 1593  
Bö. = J. Böhme, *De Theophrastis quae feruntur περί σημείων excerptis*. Diss. Halle (Hamburg) 1884  
Furl. = D. Furlanus, *Theophrasti Eresii Peripaticorum post Aristotelem* ... Hanau 1605  
Gryn. = S. Grynaeus, *Theophrasti ... Opera, quae ... adhuc restant, omnia*, Basel 1541  
Heins. = D. Heinsius, *Theophrasti Eresii Graece et Latine opera omnia*, Leiden 1613  
Ho. = A. Hort, *Theophrastus. Enquiry into Plants and ... Weather Signs*, vol. 2. Cambridge, Mass. and London 1926

- Schn. = J. G. Schneider, *Theophrasti Eresii quae supersunt omnia*, Leipzig, 1 (1818); 2 (1818); 4 (1818); 5 (1821)
- Wi. = F. Wimmer, *Theophrasti Eresii Opera quae supersunt omnia*, Vol. 3, Leipzig 1862
- Wi. 1866 = F. Wimmer, *Theophrasti Eresii Opera quae supersunt omnia*, Paris 1866
- Wood = J. G. Wood. *Theophrastus of Eresus on Winds and on Weather Signs*, London 1894

ΠΕΡΙ ΣΗΜΕΙΩΝ  
ΥΔΑΤΩΝ ΚΑΙ ΠΝΕΥΜΑΤΩΝ  
ΚΑΙ ΧΕΙΜΩΝΩΝ ΚΑΙ ΕΥΔΙΩΝ

- 1 Σημεῖα ὑδάτων καὶ πνευμάτων καὶ χειμώνων καὶ εὐδιῶν ὧδε  
ἐγράψαμεν καθ' ὅσον ἦν ἐφικτόν, ἃ μὲν αὐτοὶ προσκοπήσαντες, 5  
ἃ δὲ παρ' ἑτέρων οὐκ ἀδοκίμων λαβόντες. τὰ μὲν οὖν ἐπὶ τοῖς  
ἄστροις δυομένοις καὶ ἀνατέλλουσιν ἐκ τῶν ἀστρονομικῶν δεῖ  
2 λαμβάνειν. εἰσὶ δὲ δύοσις διτταί· οἳ τε γὰρ ἀφανισμοὶ δύοσις εἰσὶ·  
τοῦτο δὲ ἐστὶν ὅταν ἅμα συνδύνη τῷ ἡλίῳ τὸ ἄστρον, καὶ ὅταν  
ἀνατέλλοντι δύνη. ὁμοίως δὲ καὶ ἀνατολαὶ διτταί, αἱ μὲν ἐῷσι 10  
ὅταν προανατέλλῃ τοῦ ἡλίου τὸ ἄστρον, αἱ δ' ἀκρόνυχτοι ὅταν  
ἅμα δυομένῳ ἀνατέλλῃ. αἱ μὲν οὖν τοῦ Ἀρκτοῦρου λεγόμεναι  
ἀνατολαὶ ἀμφοτέρως συμβαίνουσιν· ἡ μὲν γὰρ τοῦ χειμῶνος  
ἀκρόνυχός ἐστιν, ἡ δὲ μετοπωρινὴ ἑῷα. τῶν δ' ἄλλων αἱ πλεῖσται  
τῶν ὀνομαζομένων ἐῷαι οἷον Πλειάδος καὶ Ὠρίωνος καὶ Κυνός. 15  
3 τῶν δὲ λοιπῶν σημείων ἔνια μὲν ἴδια κατὰ πάσας χώρας  
ἐστὶν ἐν ὅσαις ὄρη ὑψηλὰ καὶ αὐλῶνές εἰσι, μάλιστα δὲ ὅσα πρὸς  
θάλασσαν καθήκει τῶν ὑψηλῶν· τῶν τε γὰρ πνευμάτων ἀρχομέ-  
νων τὰ νέφη προσπίπτει πρὸς τοὺς τοιοῦτους τόπους καὶ μεθισ-  
ταμένων εἰς τοῦναντίον ἀντιμεθίστανται καὶ ὑγρότερα γινόμενα 20  
διὰ βάρος εἰς τὰ κοῖλα συγκαθίζει. διὸ δεῖ προσέχειν οὗ ἂν τις  
ἰδρυμένος ᾗ. ἔστι γὰρ αἰεὶ τινα λαβεῖν τοιοῦτον γνῶμονα καὶ ἔστι  
σαφέστατα τὰ σημεῖα τὰ ἀπὸ τούτων.
- 4 διὸ καὶ ἀγαθοὶ γεγέννηται κατὰ τόπους τινὰς ἀστρονόμοι  
ἐνιοὶ οἷον Ματρικέτας ἐν Μηθύμνῃ ἀπὸ τοῦ Λεπετύμνου, καὶ 25

1–3 περὶ σημείων ὑδάτων καὶ πνευμάτων MPH : ἀριστοτέλους V :  
ἀριστοτέλους φυσιογνωμονικά· περὶ σημείων ὑδάτων καὶ πνευμάτων B : περὶ  
σημείων ὑδάτων καὶ πνευμάτων· τοῦ ἀριστοτέλους SN : ἀριστοτέλους περὶ  
σημείων ὑδάτων καὶ πνευμάτων CQ : περὶ σημείων ὑδάτων καὶ πνευμάτων,  
χειμώνων καὶ εὐδιῶν T : *sine titulo* FAL 7 ἀνατέλλουσιν M 8 οἳ VP<sup>i.m.</sup> : εἴ M  
*non habet* Bart. 9 συνδύη V 10 ἀνατέλλοντι MV : ἅμα ἃ. *Gryn.* : [ἅμα] ἃ.  
*Schn.* : ἀνατέλλοντος *Schn.* (5.164) *ex oriente sole* Bart. 12 δυομένῳ M Bart. :  
δυόμενος V 13 ἀμφοτέρως VSNFQAP<sup>p.c.</sup> : ἀμφοτερίως M Ald. acc. varr.  
14sq. τῶν ... ἐῷαι om. V 15 κυνός V Bart. Pp.<sup>c.</sup> HC Ald. LT : κοινός M 17  
ὅσαις M : ὅσαι VP<sup>p.c.</sup> 20 ἀντιμεθίστανται M Bart. : ἀντιμεθίσταται V tent.  
*Ho. in app. crit.* 22 αἰεὶ V 23 τὰ<sup>1</sup> om. M

## THEOPHRASTUS, *ON SIGNS*

### *Introduction*

We wrote down the signs of rain, winds, storms, and fair weather as 1  
follows to the extent that we were able, some of which we our-  
selves observed, others of which we took from men of no small  
repute. Those signs, then, that have to do with the stars as they set  
and rise must be learned from the astronomers: Settings are of two 2  
sorts, since their disappearances are settings, and this occurs both  
when the star sets at the same time as the sun and when the star  
sets as the sun rises. Similarly, risings are also of two sorts, those in  
the morning when the star rises before the sun and those at night-  
fall (acronychal) when it rises while the sun is setting. The fre-  
quently-mentioned risings of Arktouros occur at both times: Its  
winter rising is acronychal, its fall rising occurs at dawn. But the  
majority of other risings of the named constellations occur at  
dawn, such as the Pleiades, Orion, and Sirius.

Of the remaining signs, some are peculiar to all places where 3  
there are high mountains and narrow valleys, especially where the  
mountains drop sharply to the sea, for, as winds start up, the  
clouds crash into such places; and as the winds reverse direction  
the clouds follow along in turn, and as they become more  
moisture-laden they gather and settle in the hollows. It is therefore  
necessary to pay attention to where a person is situated. For it is  
always possible to find such a person to serve as expert witness,  
and the signs from these people are most accurate.

Thus some quite good astronomers have developed here and 4  
there. For example, Matriketas in Methymna, looking from Mt.



Κλεόστρατος ἐν Τενέδῳ ἀπὸ τῆς Ἰδης, καὶ Φαινὸς Ἀθήνησιν ἀπὸ τοῦ Λυκαβηττοῦ τὰ περὶ τὰς τροπὰς συνεῖδε, παρ' οὗ Μέντων ἀκούσας τὸν τοῦ ἑνὸς δέοντα εἴκοσιν ἐνιαυτὸν συνέταξεν. ἦν δὲ ὁ μὲν Φαινὸς μέτοικος Ἀθήνησιν, ὁ δὲ Μέντων Ἀθηναῖος. καὶ ἄλλοι δὲ τοῦτον τὸν τρόπον ἡστρολόγησαν.

30

- 5 ἄλλα δὲ ἐστὶ σημεῖα ἃ λαμβάνεται ἀπὸ τε ζώων καὶ τῶν κατ' οἰκίαν καὶ ἐτέρων, τῶν τε τρόπων καὶ παθημάτων, μάλιστα δὲ κυριώτατα τὰ ἀπὸ τοῦ ἡλίου καὶ τῆς σελήνης· ἡ γὰρ σελήνη νυκτὸς οἷον ἡλὶός ἐστι· διὸ καὶ αἱ σύνοδοι τῶν μηνῶν χειμέριοί εἰσιν ὅτι ἀπολείπει τὸ φῶς τῆς σελήνης ἀπὸ τετράδος φθίνοντος μέχρι τετράδος ἰσταμένου. ὥσπερ οὖν ἡλίου ἀπόλειψις γίνεται κατὰ τὸν ὅμοιον τρόπον καὶ τῆς σελήνης ἔκλειψις.

35

- 6 δεῖ οὖν προσέχειν μάλιστα ταῖς ἀνατολαῖς τούτων καὶ ταῖς δύσεσιν ὁποίας ἂν ποιῶνται τὸν βουλούμενον προγινώσκειν. πρῶτον μὲν οὖν ληπτέον ὅτι αἱ διχοτομίαι διορίζουσι τὰς ὥρας ὥστε ἐπὶ τούτων δεῖ ἄθρεῖν καὶ ἐνιαυτὸν καὶ μῆνα καὶ ἡμέραν. διχοτομεῖ δὲ τὸν μὲν ἐνιαυτὸν Πλειάς τε δυομένη καὶ ἀνατέλλουσα· ἀπὸ γὰρ δύσεως μέχρι ἀνατολῆς τὸ ἥμισυ τοῦ ἐνιαυτοῦ ἐστίν. ὥστε δίχα τέμνεται ὁ πᾶς χρόνος.

40

- 7 ὁμοίως δὲ καὶ αἱ τροπαὶ καὶ ἰσημερίαι ποιοῦσιν. οἷα τις οὖν ἂν ᾗ κατάστασις τοῦ ἀέρος Πλειάδος δυομένης οὕτως ἔχει ὥς ἐπὶ τὸ πολὺ μέχρι τροπῶν, καὶ μεταβάλλῃ, μετὰ τροπὰς· ἐὰν δὲ μὴ μεταβάλλῃ διέχει οὕτως ἕως ἰσημερίας, κακείθεν ὡσαύτως μέχρι

45

27 Λυκαβηττοῦ *Heins.* : λυκάμβη τοῦ *MV acc. varr.* : λυκάμβητον *HC Ald.* *LT acc. varr.* 27sq. Μέντων *V Bart.* *Pi.m.* : μὲν τῶν *M acc. varr.* 28 τοῦ *HC Ald.* *LT* : τῶν *MV* ἐνιαυτὸν *MP<sup>a.c.</sup> Bart. Schn.* (5,LVII) : ἐνιαυτῶν *VP<sup>b.c.</sup> HC Ald.* *LT* : ἐνιαυτῶν (κύκλον) *Ho.* 29 Μέντων *MV Bart.* *Pi.m.* : μέντων *PHC Ald.* *LT* 31 καὶ *MV Bart.* : *secl. Schn.* (5.164) 31sq. κατ' οἰκίαν καὶ *Schn.* (5.164) : κατ' οἰκίαν *M Bart.* : *om. spat. vac. ca. 7 litt. V* 32 τῶν τε *nos* : τινῶν *M* : κοινῶν *V Bart.* : τινῶν κοινῶν *Schn.* (5.164) τρόπων *Schn.* (4.721) : τόπων *MV Bart.* 33 κυριώτατα τὰ *Gryn., approb. Ho.* : κύρια τὰ *tent. Ho. in app. crit.* : καὶ κυριώτατα *Schn.* (4.721) : κυριώτατά ἐστι σημεῖα *Schn.* (5.164) *ex principalissima sunt signa Bart.Z* : κυριώτατα *MV Bart.* 36 ἀπόλειψις *MV* : ἔκλειψις *Bö.* 64 37 ἔκλειψις *MV* : ἀπόλειψις *Bö.* 64 38 τούτων *V* : ταῖς *τ. M* 40 *post* ληπτέον *des. mut. H* διχοτομίαι *M* : —μαί *V* 41 ἄθρεῖν *M Bart.* : ἄρθρεῖν *V* 45 αἱ *om. V* 45sq. οὖν ἂν *V* : ἂν *M* : *pro ἂν lego οὖν Bonavent.* : ἂν οὖν *Schn.* (5.LVII) 46 τοῦ ἀέρος *Schn.* (5.LVII) *ex aeris Bart.* : *om. MV* 47 μεταβάλλῃ μετὰ τροπὰς *M* : μεταβάλλειν μέλλῃ τροπῶν *V Bart.* 48 διέχει *Schn.* (2.601) : διέχῃ *T* : δεῖ ἔχειν *MV Bart.* οὕτως *Schn.* (5.165) *e sic Bart.* : *om. MV*

Lepetymnos; Kleostratos in Tenedos, from Mt. Ida; Phaeinos in Athens observed the phenomena associated with solstices from Mt. Lykabettos; and his student Meton constructed his nineteen-year cycle. (Phaeinos was a metic in Athens, Meton was an Athenian.) And there were also others who studied astronomy in this way.

There are, however, other signs which are taken from animals 5 both domestic and otherwise, from their habits and reactions, but the best signs are from the sun and the moon (which is the night-time equivalent to the sun). This is the reason for wintry days at the time of the new moon, since the light of the moon is absent from the last four days at the end of the month until the first four of the next month. The loss of the moon, therefore, occurs just like the loss of the sun.

Anyone who wishes to predict the future must accordingly pay 6 the closest attention to the nature of the risings and settings of these two bodies. The first point to grasp is that time periods are defined by dichotomies, and so when dealing with these periods one must consider the year, the month, and the day. The rising and setting of the Pleiades divides the year in two, for there is half a year from setting until rising, and so the entire time is cut in two.

Solstices and equinoxes work the same way. Whatever the 7 general state of the atmosphere is at the time of the Pleiades' setting it remains this way in most cases until the next solstice; any change occurs after the solstice. And if there is no change, things remain the same until the equinox. From this point similarly until

- Πλειάδος, καὶ ἀπὸ ταύτης μέχρι τροπῶν θερινῶν, καὶ ἐντεῦθεν  
μέχρι ἰσημερίας, καὶ ἀπὸ ἰσημερίας μέχρι Πλειάδος δύσεως. 50
- 8 ὥς δ' αὐτως ἔχει καὶ περὶ τὸν μῆνα ἕκαστον· διχοτομοῦσι γὰρ  
αἱ τε πανσέληνοι καὶ αἱ ὀγδόαι καὶ αἱ τετράδες, ὥστε ἀπὸ  
νουμηνίας ὥς ἀπ' ἀρχῆς δεῖ σκοπεῖν. μεταβάλλει γὰρ ὥς ἐπὶ τὸ  
πολὺ ἐν τῇ τετράδι, ἐὰν δὲ μὴ ἐν τῇ ὀγδῳῃ, εἰ δὲ μὴ πανσελήνω·  
ἀπὸ δὲ πανσελήνου εἰς ὀγδῳὴν φθίνοντος, καὶ ἀπὸ ταύτης εἰς 55  
τετράδα, ἀπὸ δὲ τετράδος εἰς τὴν νουμηνίαν.
- 9 ὥς δ' αὐτως καὶ ἐπὶ τῆς ἡμέρας ἔχουσιν αἱ μεταβολαὶ ὥς ἐπὶ  
τὸ πολὺ. ἀνατολὴ γὰρ καὶ πρωὶ καὶ μεσημβρία καὶ δείλη καὶ  
δύσις καὶ τὰ τῆς νυκτὸς μέρη τὰ ἀνάλογα ταυτὸ ποιεῖ τοῖς  
εἰρημένοις περὶ πνευμάτων καὶ χειμῶνων καὶ εὐδίας. μάλιστα 60  
γὰρ ἐὰν μέλλῃ μεταβάλλειν ἐν ταῖς διχοτομίαις μεταβάλλει.  
καθόλου μὲν οὖν τὰς ὥρας οὕτω δεῖ παρατηρεῖν, καθ' ἕκαστα δὲ  
τῶν σημείων κατὰ τὸν ὑπογεγραμμένον τρόπον.
- 10 ὕδατος μὲν οὖν σημεῖα τὰ τοιαῦτα δοκεῖ εἶναι. ἐναργέστατον  
μὲν οὖν τὸ ἐωθινὸν ὅταν πρὸ ἡλίου ἀνατολῆς φαίνεται ἐπιφοι- 65  
νίσσον σημεῖον· ἢ γὰρ αὐθημερὸν ἐπισημαίνει ἢ τριῶν ἡμερῶν  
ὥς ἐπὶ τὸ πολὺ. ἃ δηλοῖ δὲ καὶ τὰ ἄλλα σημεῖα· ἐὰν γὰρ δὴ  
πρότερον, τριταῖα μάλιστα σημαίνει τὸ ἐπιφοινίσσον καὶ δύνον-  
τος, ἥττον δὲ ἢ τὸ ἐωθिनοῦ.
- 11 καὶ ἐὰν δύνῃ χειμῶνος ἢ ἔαρος εἰς νεφέλιον τριῶν ἡμερῶν ὥς 70  
τὰ πολλὰ ἐπισημαίνει. καὶ ἐὰν ῥάβδοι νοτόθεν, ταυτὰ δὲ ταῦτα  
βορρᾶθεν γινόμενα ἀσθενέστερα. καὶ ἐὰν ἀνίσχων μέλαν σημει-  
ον ἴσχη, καὶ ἐὰν ἐκ νεφελῶν ἀνέχῃ ὕδατικόν, καὶ ἐὰν ἀκτῖνες  
ἀνίσχοντος ἀποτεινῶσι πρὶν ἀνατεῖλαι κοινὸν ὕδατος σημεῖον  
καὶ ἀνέμου. καὶ ἐὰν καταφερομένου τοῦ ἡλίου ὑφίστηται νέφος 75

49sq. καὶ<sup>1</sup> ... Πλειάδος *om.* V 50 Πλειάδος M *Bart.* : Πλειάδας *Wi.* 1866 53  
νουμηνίας VAP<sup>p.c.</sup> C *Ald.* LT *Bart.* LR (a nova luna) : σύμηνίας M : coniunctione  
lunae cum sole *Bart.* 54 τῇ τετράδι V *Bart.* *Furl.* : τῇ γῇ τετράδι M 59 τὰ  
ἀνάλογα M *Bart.* : ἀνάλογον V 60 χειμῶνων V *Bart.* : χειμῶνος M 61 μέλλῃ  
MV *Bart.* : μέλλει PC 65 φαίνεται *Schn.* : φαίνοντο MV 66 αὐθημερὸν M  
*Bart.* : αὐθημερινὸν *Ald.* LT : αὐθημερῶν V 67 ἃ V *Bart.* : *om.* M δὴ MV  
*Bart.* : μὴ *Wi.* 68 σημαίνει M : σημαίνῃ V 70 ἔαρος MV *Bart.* : ἄερος PC  
*Ald.* LT 72sq. σημεῖον MV : σῆμα *Wood* 56 n. 10 73 ἴσχη M : ἀνίσχη V  
ἀνέχῃ *Schn.* (4.723) : ἔχη VSNFQAPC *Ald.* LT : ἔχοι M ὕδατικόν M<sup>a.c.</sup> V *Bart.*  
*Heins.* *Schn.* (5.LVII) : ὕδατικῶν M<sup>p.c.</sup> PC *Ald.* LT 74 ἀποτεινῶσι V *Bart.* :  
ἀνατεινῶσι M 75 ὑφίστηται MV : ὑφέσσηται *Ald.* LT : ὑφέσταται C

the Pleiades rise, and from thence until the summer solstice, and thence until the next equinox, and from the equinox until the Pleiades set.

Likewise with each month: Full moons, eighth days, and fourth 8 days serve to divide the month into halves; hence one must regard the new moon as the beginning. A change ⟨in weather⟩ occurs most often on the fourth day; if not, on the eighth; if not then, at the time of the full moon. The next period is from full moon until the eighth day from month's end; from this to four days from the end; and from this to the new moon.

Even during the day (for the most part) changes occur in like 9 manner: There is sunrise, morning, mid-day, dusk, and sunset; the analogous parts of the night act in the same way in regard to winds, storms, and fair weather, for if the weather is going to change, it almost always does so at these midpoints. In general, therefore, one should observe the time periods carefully in the way described; but for each of the signs one must observe as indicated below.

### *Signs of Rain*

The signs of rain seem to be as follows: That which appears at 10 dawn is the surest, when before sunrise there is a clear sign of reddening; for this is usually an indication ⟨of rain⟩ either that very day or within three days. The other signs also clearly indicate this, for surely even at sunset reddening is a sign of rain on the third day, if not before—but less so than at sunrise.

Moreover, the sun setting into a cloud in winter or spring is a 11 sign ⟨of rain⟩ usually within three days; and ⟨so too⟩ if there are streaks of light seen to the south ⟨of the sun⟩, but these same things occurring to the north are less secure signs. It is also a sign of rain if the sun has a black mark when it rises, and if it rises from clouds. And if at dawn rays extend before ⟨actual⟩ sunrise, this is a sign of both rain and wind. If there is a cloud in front of the setting sun

ὕφ' οὗ ἔαν σχίζωνται αἱ ἀκτῖνες χειμερινὸν τὸ σημεῖον. καὶ ὅταν καυματίας δύηται καὶ ἀνατέλλῃ, ἔαν μὴ ἄνεμος γένηται ὕδατος τὸ σημεῖον.

- 12 τὰ αὐτὰ δὲ σημαίνει καὶ σελήνη πανσελήνῳ ἀνίσχουσα, ἀσθενέστερα δὲ ὁ μείζ. ἔαν μὲν ἤ ἀργυρώδης εὐδίαν, εἰ δὲ 80  
 πυρώδης ἄνεμον, ἔαν δὲ ζοφώδης ὕδωρ σημαίνει· σημαίνει δὲ ὅτι ἂν σημαίνῃ τριταῖος ὢν ὁ μείζ.
- 13 ἀστέρες πολλοὶ διόπττοντες ὕδατος ἢ πνεύματος, καὶ ὅθεν ἂν διόπτωσιν ἐκεῖθεν τὸ πνεῦμα ἢ τὸ ὕδωρ. καὶ ἔαν ἀκτῖνες ἀθρόαι ἀνίσχουσιν ἀνιόντος ἢ δύνοντος σημεῖον χειμῶνος. καὶ ὅταν 85  
 ἀνίσχοντος τοῦ ἡλίου αἱ αὐγαὶ οἷον ἐκλείποντος χρῶμα ἴσχωσιν ὕδατος σημεῖον. καὶ ὅταν νεφέλαι πόκοις ἐρίων ὅμοιαι ὥσιν ὕδωρ σημαίνει. πομφόλυγες ἀνιστάμεναι πλείους ἐπὶ τῶν ποταμῶν ὕδωρ σημαίνουν πολὺ. ὥς δ' ἐπὶ τὸ πολὺ ἱρις περὶ λύχνον ἢ διὰ λύχνου διαφανομένη νότια σημαίνει ὕδατα. 90
- 14 καὶ οἱ μύκητες ἔαν νότια ἢ ὕδωρ σημαίνουσι, σημαίνουσι δὲ καὶ ἄνεμον κατὰ λόγον ὥς ἂν ἔχωσι πλήθους καὶ μεγέθους, σμικροὶ δὲ καὶ κεγχρώδεις καὶ λαμπροὶ ὕδωρ καὶ ἄνεμον. καὶ ὅταν χειμῶνος τὴν φλόγα (ὁ λύχνος) ἀπωθῇ διαλιπὼν οἶον πομφόλυγας ὕδατος σημεῖον, καὶ ἔαν πηδῶσιν αἱ ἀκτῖνες ἐπ' 95  
 αὐτόν, καὶ ἔαν χειμῶνος ὄντος μύκαι ἐπιγένωνται.
- 15 ὄρνιθες λουόμενοι μὴ ἐν ὕδατι βιοῦντες ὕδωρ ἢ χειμῶνα σημαίνουν. καὶ φρῦνος λουόμενος καὶ βάτραχοι μᾶλλον ἄδοντες

77 καυματίας MV Bart. : fortasse καυματίσας Bonav. δύηται M : δύνηται V : δέηται Ald. LT : δύνῃ Bonav. 78 τὸ om. V 80 ὁ μείζ om. Bart. 80sq. ἀργυρώδης εὐδίαν, εἰ δὲ πυρώδης (εὐδίαν ... πυρώδης V<sup>s.l.</sup>) ἄνεμον, εἰ δὲ ζοφώδης ὕδωρ σημαίνει V Bart. : γυρώδης σημαίνει τὸν μῆνα, ἔαν δὲ ζοφώδης ὕδατώδῃ M : πυρώδης εὐδιεινὸν σημαίνει ... ὕδατώδῃ Furl. : post γυρώδης inser. πνευματώδῃ Furl. in notis 81sq. σημαίνει<sup>II</sup> ... μείζ om. V Bart. P 82 σημαίνῃ Schn. : —εἰ M 84 ἐκεῖθεν V : ἐντεῦθεν M καὶ om. V 85 δύνοντος σημεῖον MV Bart. Furl. : σ. δ. Ald. L : om. T χειμῶνος V : om. M Bart. : ὕδατος Furl. 86 ἴσχωσιν M : ἔχωσιν V 87 ὥσιν Schn. (4.724) : εἰσὶν MV 88 ὕδωρ σημαίνει MV Bart. : om. Heins. ante πομφόλυγες secl. quam marg. gloss. ὑετοῦ δὲ σημεία (MV Bart.) Schn. (4.724 f.) 88sq. τῶν ποταμῶν M Bart. : τὸν ποταμὸν V 89 ὕδωρ ... πολὺ om. V 90 διαφανομένη M : φανομένη VT 92 ὥς ἂν MV Bart. Schn. (4.725) : ὥς ἔαν PC : ἥς ἔαν Ald. LT 93—96 σμικροὶ ... ἐπιγένωνται om. V 93 δὲ inser. Furl. 94 ὁ λύχνος inser. Furl. 96 χειμῶνος ὄντος μύκαι nos : τρεῖς μύκαι M Bart. : τρεῖς νύκται P Ald. L : τρεῖς νύκτας C : τρεῖς νύκτες T Gryn. : σπινθήρες Furl. 97 χειμῶνα MV Bart. : χειμῶνας PC Ald. LT 98 φρῦνος λουόμενος V : φρύνη λουομένη M Bart.

which splits up its rays, this is a sign of stormy weather. And if the sun sets or rises while burning hot and there is no wind, this is a sign of rain.

These same things [i.e., rain] are indicated by a rising full <sup>12</sup> moon; a crescent moon is less sure a sign. And if the moon is silvery, it signals fair weather; and if fiery, wind; and if cloudy, rain. The moon indicates what it indicates on the third day.

Shooting stars in great number are a sign of rain or wind that <sup>13</sup> will come from the same direction as the shooting stars. And if at sunrise or sunset the rays rise set close together, this is a sign of storm. And when at sunrise its rays have the same color they do during an eclipse, this is a sign of rain, as well as when clouds resemble woolen fleece. Bubbles rising to the surface of rivers more than is usual are a sign of much rain. Often, an iridescent halo shining either around or through a lamp is a sign of rain from the south.

If the winds are from the south, snuff on a lamp's wick signals <sup>14</sup> rain; and in proportion to its amount it also signals wind, and if it is finely granulated like millet seeds and shiny it signals both rain and wind. It is a sign of rain when during winter it <the lamp> intermittently casts off the flame like bubbles. Likewise if the rays <of the flame> leap upon it, and if during winter snuff builds up.

Nonaquatic birds bathing themselves are a sign of rain or <sup>15</sup> storm. And a toad washing itself and frogs croaking more than

- ὔδωρ σημαίνουνσι. καὶ ἡ σαύρα φαινομένη ἦν καλοῦσι σαλαμάν-  
δραν, ἔτι δὲ καὶ χλωρὸς βάτραχος ἐπὶ δένδρου ἄδων ὔδωρ ση- 100  
μαίνει. χελιδόνες τῇ γαστρὶ τύπτουσαι τὰς λίμνας ὔδωρ σημαίνου-  
σι. βοῦς τὴν προσθίαν ὀπλὴν λείξας χειμῶνα ἢ ὔδωρ σημαίνει. ἐάν  
δὲ εἰς τὸν οὐρανὸν ἀνακίπτων ὁσφραίνεται, ὔδωρ σημαίνει.
- 16 κορώνη ἐπὶ πέτρας κορυυσομένη ἦν κῦμα κατακλύζει ὔδωρ  
σημαίνει· καὶ κολυμβῶσα πολλάκις καὶ περιπετομένη ὔδωρ ση- 105  
μαίνει. κόραξ πολλὰς μεταβάλλων ἔωθεν φωνάς, τούτων ἐάν δις  
ταχὺ φθέγγηται καὶ ἐπιρροιζήσῃ καὶ τινάξῃ τὰ πτερὰ, ὔδωρ ση-  
μαίνει. καὶ ἐάν ὑετῶν ὄντων πολλὰς μεταβάλλῃ φωνάς καὶ ἐάν  
φθειρίζηται ἐπ' ἐλαίας. καὶ ἐάν τε εὐδίας ἐάν τε ὕδατος ὄντος  
μιμῆται τῇ φωνῇ οἷον σταλαγμοὺς ὔδωρ σημαίνει. ἐάν τε κόρα- 110  
κες ἐάν τε κολιοὶ ἄνω πέτωνται καὶ ἱερακίζουσιν ὔδωρ σημαί-  
νουσι. καὶ ἐάν κόραξ εὐδίας οὔσης μὴ τὴν εἰωθυῖαν φωνὴν ἦν καὶ  
ἐπιρροιβδῇ ὔδωρ σημαίνει.
- 17 ἐάν ἱέραξ ἐπὶ δένδρου καθεζόμενος καὶ εἴσω εἰσπετόμενος  
φθειρίζηται ὔδωρ σημαίνει. καὶ θέρους ὅταν πολλοὶ ἀθρόοι φα- 115  
νῶσιν ὄρνιθες οἱ βιοτεύουσιν ἐν νήσῳ ὔδωρ σημαίνουνσι· ἐάν δὲ  
μέτριοι ἀγαθὸν αἰξί καὶ βουσίν, ἐάν δὲ πολλοὶ ὑπερβολῇ αὐχμὸν  
ἰσχυρόν. ὅλως δὲ ὄρνιθες καὶ ἀλεκτρυόνες φθειριζόμενοι ὕδατι-  
κὸν σημείον καὶ ὅταν μιμῶνται ὔδωρ ὡς ὕον.
- 18 καὶ ἐάν νῆττα ἡμερος ὑπιοῦσα ὑπὸ τὰ γεῖσα ἀποπτερυγίζη- 120  
ται ὔδωρ σημαίνει, ὁμοίως δὲ καὶ κολιοὶ καὶ ἀλεκτρυόνες ἐάν τ'

99 ὔδωρ σημαίνουνσι V : σημαίνουνσιν ὔδωρ M Bart. ἡ om. V σαύρα M Bart. : σαλάμανδρα V<sup>p.c.</sup> 99sq. ἦν ... δὲ om. V 100 χλωρὸς MV Bart. Gryn. : χλωροῖς Ald. L : ἐν χλωροῖς T 101sq. σημαίνουνσι M : σημαίνει V 102 ἢ ὔδωρ om. V 104–106 κορώνη ... σημαίνει om. V 104 κορυυσομένη M Bart. : λακερυσομένη Bō. 83 : περυυσομένη Maass 105 περιπετομένη M : πετομένη Bonav. 106 μεταβάλλων ἔωθεν Schn. (5.165) e permutans mane Bart.FAB : μεταβάλ(λ)ειν εἰωθὼς M : μεταβάλλειν εἰωθὼς V : permutare mane Bart.PZ : permutare consuetus Bart.LR τούτων ἐάν MV Bart. : ταύτην ἦν Turnebus Advers. 25,13 106sq. δις ταχὺ V : ταχὺ δις M Bart. 107 post τινάξῃ (MV) inser. τὰ πτερὰ Schn. (5.LVII.165) e concutiat alas Bart. 108–110 καί<sup>1</sup> ... σημαίνει om. V 111 ἱερακίζουσιν Schn. : ἱερακίζουσιν MV 112 καί<sup>1</sup> om. V οὔσης om. M 114 καὶ εἴσω εἰσπετόμενος om. V 117 αἰξί MV : αἰξιὸν PC βουσί Schn. (5.166) e bobus Bart. : βοτοῖς MV 119–121 καὶ ... σημαίνει om. V 119 ὡς ὕον M Bart. : fortasse ὥστ' ὕειν Bonav. 120 ἐάν nos : post ἡμερος inser. ἐάν N Furl. : εἰ M : ἡ C Ald. LT : non habet Bart. 121 ἀλεκτρυόνες M Bart. : ἄ. καὶ νῆττα ἡμερος V : ἀλκυόνες Bō. 83

usual signal rain. Likewise the appearance of the lizard which they call “salamander”; and furthermore a green frog singing in a tree signals rain. Swallows striking the surface of a lake with their bellies signal rain. An ox licking a forehoof signals storm or rain; if he arches his head up toward the sky and sniffs this signals rain.

A crow lifting its head while on a rock washed by a wave signals 16 rain; likewise, if it makes frequent dives and flies in circles it signals rain. If a raven in the morning producing many different sounds repeats one of these quickly twice over and shakes its wings to make a whirring sound, it signals rain. Likewise, if during wet weather it produces many different sounds and if it hunts for lice while in an olive tree. And whether during fair or foul weather it imitates the sound of raindrops, it signals rain. If ravens or jackdaws fly high screeching like hawks, they signal rain. And if a raven during fair weather emits a sound other than its customary one and whirrs its wings, it signals rain.

If a hawk sitting on a tree and flying directly into it hunts for 17 lice, it signals rain. And during summer, when many island-dwelling birds show up in dense flocks, they signal rain. But if there are not many of them it is good for goats and herds; but if they are too many there will be a severe drought. And generally, birds and chickens’ ridding themselves of fleas signal rain; so too when they imitate the sound of rainwater falling.

Likewise, if a tame duck makes its way under the cornice of a 18 house and flaps its wings, this signals rain; so too if jackdaws and



ἐπὶ λίμνη ἢ θαλάττῃ ἀποπτερυγίζονται ὥς νῆττα, ὕδωρ σημαίνουσι. καὶ ἐρωδιὸς ὄρθριον φθεγγόμενος ὕδωρ ἢ πνεῦμα σημαίνει· καὶ ἐὰν ἐπὶ θάλατταν πετόμενος βοᾷ μᾶλλον ὕδατος σημεῖον ἢ πνεύματος, καὶ ὅλως βοῶν ἀνεμῶδες.

125

- 19 καὶ ὁ σπίνος ἐν οἰκίᾳ οἰκουμένη ἐὰν φθέγγηται ἔωθεν ὕδωρ σημαίνει ἢ χειμῶνα. καὶ χύτρα σπινθηρίζουσα πᾶσα περίπλεως ὕδατος σημεῖον. καὶ ἱουλοὶ πολλοὶ πρὸς τοῖχον ἔρποντες ὕδατ-  
κόν. δελφίς παρὰ γῆν κολυμβῶν καὶ ἀναδυσόμενος πυκνὰ ὕδωρ ἢ  
χειμῶνα σημαίνει.

130

- 20 Ὑμηττος ὁ ἐλάττων, ἄνυδρος καλούμενος, ἐὰν ἐν τῷ κοίλῳ  
νεφέλιον ἔχῃ, ὕδατος σημεῖον. καὶ ἐὰν ὁ μέγας Ὑμηττος τοῦ  
θέρους λευκὰς ἔχῃ νεφέλας ἄνωθεν καὶ ἐκ πλαγίου ὕδατος ση-  
μεῖον, καὶ ἐὰν ὁ ἄνυδρος Ὑμηττος λευκὰς ἔχῃ ἄνωθεν καὶ ἐκ  
πλαγίου. καὶ ἐὰν περὶ ἰσημερίαν λιψὺ πνεύσῃ ὕδωρ σημαίνει.

135

- 21 αἱ δὲ βρονταὶ αἱ μὲν χειμεριναὶ καὶ ἐωθιναὶ μᾶλλον ὕδωρ  
σημαίνουσιν· αἱ δὲ θεριναὶ καὶ μεσημβριναὶ οὐ. ἐσπεριναὶ δὲ  
βρονταὶ ὕδατικὸν σημεῖον. ἀστραπαὶ δὲ ἐὰν γε πανταχόθεν γί-  
νονται ὕδατος ἢ ἀνέμου σημεῖον, καὶ ἐσπεριναὶ ὡσαύτως. καὶ  
ἐὰν ἀκρωρείας νότου πνέοντος νοτόθεν ἀστράψῃ ὕδωρ ἢ ἄνεμον  
σημαίνει. καὶ ζέφυρος ἀστράπτων ἄνωθεν πρὸς βορείου ἢ χει-  
μῶνα ἢ ὕδωρ σημαίνει. καὶ θέρους αἱ ἐσπέραι ἀστραπαὶ ὕδωρ  
αὐτίκα σημαίνουσιν ἢ τριῶν ἡμερῶν. καὶ ὀπώρας βορρᾶθεν  
ἀστραπαὶ ὕδατικὸν σημεῖον.

140

122 θαλάττῃ M : θαλάσση V 122sq. σημαίνουσιν V : σημαίνει M *Bart.* 123  
καὶ *om.* V 124sq. καὶ ... ἀνεμῶδες *om.* V 126 σπίνος *Schn.* (4.729 f.) : πῖλος  
MV *acc. varr. Bart.* : πελλὸς (*sc.* ἐρωδιὸς) *Furl. in notis* : πίπος *Bonav.* 127  
σπινθηρίζουσα VP<sup>s.l.C</sup> *Ald.* LT : σπινθήρων MP<sup>i.m.</sup> : σπινθηρίζων P : scintillans  
*Bart.* 128 καὶ *om.* V 129 παρὰ γῆν MV : iuxta (*super Bart.Z*) mare *Bart.*  
ἀναδυσόμενος πυκνὰ MV : *superelevans se et occidens frequenter Bart.* 131–135  
Ὑμηττος ... καὶ *om.* V 131 ὁ M *Gryn.* : *om. Ald.* LT *edd. cett.* ἐν T *Bart. Schn.*  
(4.731) *tent. Ho. in app. crit.* : *om.* M 133 ἔχῃ P *Ald.* LT : ἔχει M : ἔχει SNFQA  
134 λευκὰς *om. Wi.* 135 *ante* περὶ *inser.* δὲ V *Bart.* 136 *ante* ὕδωρ *inser.*  
ἄνεμον ἢ *Furl.* 137 καὶ μεσημβριναὶ οὐ V : μεσημβρίας κ. M *Bart.* :  
μεσημβρίαν κ. *Furl.* δὲ<sup>II</sup> *om. Ald.* LT 138sq. γίνονται MV : γέν– *Schn.* 139  
ὕδατος ἢ ἀνέμου V *Bart.* : ἢ ὕ. ἢ ἄ. T : ὕ. ἄν ἄ. M : ὕ. ἄν ἢ ἄ. *Ald. L* 140  
ἀκρωρείας MV : ἀκρο– P *Ald.* : ἀκρωρίας *Schn.* 140sq. ἢ ἄνεμον σημαίνει  
V : σ. ἢ ἄ. M *Bart.* 141 ζέφυρος P *Ald.* LT : ζοφερός MV *Bart.* ἄνωθεν MV  
*Bart. Schn.* (5.166) : *om. Ald.* LT 143 *post* σημαίνουσιν (M *Bart.*) *inser.* καὶ  
μᾶλλον ἐὰν βόρραθεν V 143–148 ἢ ... ἱριδες *om.* V 144 ἀστραπαὶ *Schn.*  
(5.166) *e* coruscationes *Bart.* : ἀστράπτων M

roosters flap their wings like a duck, whether on a lake or the sea, this signals rain. And a heron uttering his cry early in the morning signals rain or wind; but if he cries out loudly while flying seaward, this is a sign more of rain than of wind. Generally, if he cries loudly it is a sign of wind.

If a finch sings at dawn in an inhabited house, it signals rain or 19 storm. If a cooking vessel filled to the brim emits sparks all over it is a sign of rain. Centipedes in large numbers creeping towards the wall are a sign of rain. A dolphin diving near land and coming up again over and over signals rain or storm.

If the Lesser Mt. Hymettos (called the Dry <Hymettos>) has a 20 small cloud in its valley, this is a sign of rain; likewise if the Greater Mt. Hymettos has white clouds in the summer above and alongside, this too is a sign of rain, and if the Dry Hymettos has white clouds above and alongside. And if Lips blows at an equinox it signals rain.

Thunder in winter at dawn is a rather good sign of rain, where- 21 as thunder in summer at midday is not, but evening thunder *is* a sign of rain. And, further, if flashes of lightning occur on all sides, this is a sign of rain or wind; likewise if they occur at evening. And if, while Notos the south wind is blowing at dawn, lightning flashes in the south, this signals rain or wind. And Zephyros coming from the north flashing with lightning on high signals either storm or rain. Evening flashes of lightning during summer signal rain immediately or within three days. Lightning from the north in late summer is a sign of rain.

- 22 ἡ Εὐβοία ὅταν διαζώσθῃ μέση, ὕδωρ διὰ ταχέων. καὶ ἐὰν ἐπὶ 145  
 τὸ Πήλιον νεφέλῃ προσίξῃ ὅθεν ἂν προσίξῃ ἐντεῦθεν ὕδωρ ἢ  
 ἄνεμον σημαίνει. ὅταν ἱρις γένηται ἐπισημαίνει ἐὰν τε πολλαὶ  
 ἱριδες γίνωνται ὕδωρ σημαίνει ἐπὶ πολὺ. ἀλλὰ πολλάκις καὶ οἱ  
 ὄξεῖς ἥλιοι ὅταν ἐκ νεφῶν. μύρμηκες ἐν κοίλῳ χωρίῳ ἐὰν τὰ φᾶ  
 ἐκφέρωσιν ἐκ τῆς μυρμηκιᾶς ἐπὶ τὸ ὑψηλὸν χωρίον ὕδωρ ση- 150  
 μαίνουνσιν, ἐὰν δὲ καταφέρωσιν εὐδίαν. ἐὰν παρήλιοι δύο γένων-  
 ται, ὁ μὲν νοτόθεν ὁ δὲ βορρᾶθεν, καὶ ἄλλως ἅμα ὕδωρ διὰ τα-  
 χέων σημαίνουσι. καὶ ἄλλως αἱ μέλαιναι ὕδατικὸν καὶ μᾶλλον αἱ  
 δειλῆς.
- 23 ἐν τῷ Καρκίνῳ δύο ἀστέρες εἰσὶν, οἱ καλούμενοι Ὅνοι, ὧν τὸ 155  
 μεταξὺ τὸ νεφέλιον ἢ Φάτνη καλουμένη. τοῦτο δὲ ἐὰν ζοφῶδες  
 γένηται, ὕδατικόν. ἐὰν μὴ ἐπὶ Κυνὶ ὕψῃ ἢ ἐπὶ Ἀρκτούρῳ ὡς ἐπὶ  
 τὸ πολὺ πρὸς ἰσημερίαν ὕδωρ ἢ ἄνεμος. καὶ τὸ δημόσιον τὸ περὶ  
 τὰς μυίας λεγόμενον ἀληθές· ὅταν γὰρ δάκνωσι σφόδρα, ὕδατος  
 σημεῖον. σπίνος φθεγγόμενος ἔωθεν μὲν ὕδωρ σημαίνει ἢ χειμῶ- 160  
 να, δειλῆς δὲ ὕδωρ.
- 24 τῆς δὲ νυκτὸς ὅταν τὸν Ὑμηττον κάτωθεν τῶν ἄκρων νεφέλῃ  
 διαζώσῃ λευκὴ καὶ μακρὰ ὕδωρ γίνεται ὡς τὰ πολλὰ μετρίων  
 ἡμερῶν. καὶ ἐὰν ἐν Αἰγίνῃ ἐπὶ τοῦ Διὸς τοῦ Ἑλλανίου νεφέλῃ  
 καθίζηται ὡς τὰ πολλὰ ὕδωρ γίνεται. ἐὰν ὕδατα πολλὰ γίνηται 165  
 χειμερινά, τὸ ἔαρ ὡς τὰ πολλὰ γίνεται αὐχμηρόν· ἐὰν δ' αὐχμη-  
 ρὸς ὁ χειμὼν τὸ ἔαρ ὕδατῶδες. ὅταν χιόνες πολλαὶ γίνωνται, ὡς  
 τὰ πολλὰ εὐετηρία γίνεται.

145 διαζώσθῃ *Schn.* (4.732 f.) : διαζοφωθῇ *Schn.* (5.166) *e* offuscabitur *Bart.* : διαχωσθῇ *M* : διαχωρισθῇ *T* 146 προσίξῃ<sup>1</sup> *M* : προσίξῃ *Gryn.* 148 γίνονται *V* : γένωνται *M* ὕδωρ σημαίνει *MV Bart.* : σ. ὕ. *Ald.* *LT* ἀλλὰ πολλάκις *om.* *V* 149 ἐκ νεφῶν *V* : ἐκ νεφέλης *M Bart.* 151sq. *post* γένωνται *inser.* καὶ *M Bart.* 152sq. ταχέων *M* : ταχέος *V* 153–158 καὶ<sup>1</sup> .... ἄνεμος *om.* *V* 156 ἢ Φάτνη *Furl.* : οὐ Φ. *M* : Φ. ὅν *Gryn.* (ὅν *typogr. in marg.*) : Φ. *T* : praesepe *Bart.* δὲ *om.* *Schn.* 158 τὸ<sup>1</sup> *om.* *Heins.* ἰσημερίαν *Ald.* *LT Bart.* : ἡμερίαν *M* 159 μυίας *V Ald.* *LT* : μύας *M Bart.* 160sq. χειμῶνα *M Bart.* : μᾶλλον ἄνεμον *V* 162–165 τῆς ... γίνεται *om.* *V* 162 τῆς δὲ *PC Ald.* *LT* : τῆς δὲ τῆς *M* νεφέλῃ *M* : νεφελῶν *PC Ald.* *LT* : nubes *Bart.* 163 διαζώσῃ *Furl.* : διασώξῃ *M* : cinxerit *Bart.* 164 *post* Αἰγίνῃ *inser.* καὶ *C Ald.* *LT* 165 γίνεται *Furl.* : γίνηται *M* : γίνωνται *V* 166 τὸ ἔαρ ὡς τὰ πολλὰ *M Bart.* : ὡς τὰ πολλὰ τὸ ἔαρ *V*

When Euboia is belted around the middle ⟨with clouds⟩, rain will 22 soon come. And if a cloud settles on Mt. Pelion, this is a sign that rain or wind will come from the place where it settles. Whenever a rainbow occurs, it signals ⟨rain⟩, and if many rainbows occur they signal a lot of rain, but often bright suns ⟨breaking⟩ out of a cloud also ⟨signal rain⟩. If ants ⟨living⟩ in a depression carry their eggs out of the anthill and move upwards, this is a sign of rain; but if they carry them downwards, it is a sign of fair weather. If two mock suns occur (both the one to the north ⟨of the sun⟩ and the one to the south) and a halo at the same time, these signal imminent rain. And black halos are a sign of rain, especially those occurring in the afternoon.

In Cancer there are two stars, the so-called Asses, between 23 whom is the nebula called the Manger. If this grows dark it is a sign of rain. If it is not rainy at ⟨the rising of⟩ Sirius or Arktouros, there will be, for the most part, rain or wind at the time of the ⟨autumnal⟩ equinox. And the popular expression about flies is true: When they bite frequently it is a sign of rain. A chaffinch singing at dawn signals rain or storm; in the afternoon it signals rain.

When at night a large white cloud girdles Mt. Hymettos below 24 its peaks, rain generally occurs in a reasonable number of days. And if a cloud settles on ⟨the temple of⟩ Zeus Hellanios in Aigina, rain generally occurs. If many rains occur in winter, the spring for the most part is dry; but the winter is dry, spring is usually rainy. Whenever many snowfalls occur, a fertile growing season follows.

- 25 φασὶ δέ τινες εἰ ἐν ἄνθρακι λαμπρῷ χάλαζα ἐπιφαίνεται  
 χάλαζαν προσημαίνειν ὥς τὰ πολλά· ἐὰν δὲ ὥσπερ κέγχροι 170  
 μικροὶ λαμπροὶ πολλοί, ἀνέμου μὲν ὄντος εὐδίαν, μὴ ἀνέμου δὲ  
 ὕδωρ ἢ ἄνεμον. ἔστι δ' ἄμεινον πρῶτον γίνεσθαι βόρειον ὕδωρ  
 νοτίου καὶ τοῖς φυομένοις καὶ τοῖς ζώοις· δεῖ δὲ γλυκὺ εἶναι καὶ  
 μὴ ἄλμυρόν τοις γευομένοις. καὶ ὅλως τὸ ἔτος τὸ βόρειον τοῦ  
 νοτίου κρεῖττον ἔστι καὶ ὑγιεινότερον. καὶ ὅταν ὀχεύωσι πρόβα- 175  
 26 τα ἢ αἶγες χειμῶνος μακροῦ σημείου. ὕδατος μὲν οὖν ταῦτα  
 λέγεται σημεῖα·

ἀνέμων δὲ τάδε. ἀνατέλλων ὁ ἥλιος καυματίας καὶ μὴ ἀπο-  
 στίλβων ἀνεμῶδες τὸ σημεῖον· καὶ ἐὰν κοῖλος φαίνεται ὁ ἥλιος  
 ἀνέμου ἢ ὕδατος τὸ σημεῖον. καὶ ἐὰν ἐπὶ πολλὰς ἡμέρας καυμα- 180  
 τίας αὐχμοὺς καὶ ἀνέμους πολυχρονίους σημαίνει. ἐὰν αἱ ἀκτῖνες  
 αἱ μὲν πρὸς βορρᾶν αἱ δὲ πρὸς νότον σχίζονται τούτου μέσου  
 ὄντος κατ' ὀρθρον κοινὸν ὕδατος καὶ ἀνέμου σημείον ἔστιν.

- 27 ἔστι δὲ σημεῖα ἐν ἡλίῳ καὶ σελήνῃ τὰ μὲν μέλανα ὕδατος, τὰ  
 δ' ἐρυθρὰ πνεύματος. ἐὰν δὲ ὁ μὴν βορείου ὄντος ὀρθὸς εἰστήκη 185  
 ζέφυροι εἰώθασιν ἐπιπνεῖν καὶ ὁ μὴν χειμερινὸς διατελεῖ. ὅταν  
 μὲν ἡ κεραία τοῦ μηνὸς ἐπικύπτῃ βόρειος ὁ μείζ· ὅταν δ' ἡ  
 κάτωθεν νότιος· ἐὰν δ' ὀρθὸς καὶ μὴ καλῶς ἐγκεκλιμένος μέχρι  
 τετράδος καὶ εὐκυκλος εἴωθε χειμάζειν μέχρι διχομηνίας. ση-  
 μαίνει ζοφώδης μὲν ὦν ὕδωρ, πυρώδης δὲ πνεῦμα. 190

169–174 φασὶ ... ὅλως *om.* V 169 *ante* εἰ *inser.* καὶ M ἐν ἄνθρακι λαμπρῷ  
*nos* : ἄνθραξι λαμπροῖς *Schn.* (4.734) : ἐν ἄστρασι λαμπρὰ M *Bart.* 170  
 προσημαίνειν T *Schn.* : –εἰ M 174 γευομένοις M *Bart.* *Gryn. Schn.* (5.LVII) :  
 γεν– *Furl. err. typogr.* 174sq. τὸ ἔτος τὸ βόρειον τοῦ νοτίου κρεῖττον ἔστι V  
*Bart.* : ἔτος βέλπιον νοτίου βόρειον M 175sq. καὶ<sup>1</sup> ... σημείον *om.* V 175  
 ὀχεύωσι M : ὀχεύωσι *Ald.* LT : πάλιν ὀχευθῶσι *Schn.* (4.734) : ὀχεύονται *Wi.*  
 176 αἶγες *Furl.* : αἶγας M 178 ἀνέμων δὲ V *Bart.* : ἀνέμου δὲ καὶ πνευμάτων  
 M καὶ V *Bart.* : καὶν M 178sq. ἀποστίλβων *nos* : ὑποστίλβων V : *scintillans*  
*Bart.* : ἀποστίλβη M 180 τὸ *om.* V 182sq. τούτου μέσου ὄντος MV : *ante*  
 μέσου *prob.* δὲ *Schn.* (5.167) *e hoc autem medio existente Bart.* 183 ὀρθρον  
 MV : ὀρθὸν *prob. Schn.* (5.167) *e rectum Bart.* : ὀρθρίον *Gryn.* : αἶθριον *Bö.* 74  
 184 ἔστι .... ὕδατος M *Bart.* : καθόλου δὲ τὰ ἐν ἡλίῳ καὶ σελήνῃ μέλανα σημεῖα  
 ὕδατος σημαντικὰ V 185 δὲ M *Bart.* : δὲ καὶ *Furl.* : μὲν V μὴν V : μεις M  
*acc. varr.* ὀρθὸς V *Bart. Ald.* LT : ὀρθὸς M εἰστήκη *Ald.* LT : εἰστήκει MV  
 186 μὴν MV : μεις B 187 μὲν M *Bart.* : δὲ V *post* κεραία *inser.* ἡ ἄνω *Schn.*  
 (4.736) 189 εὐκυκλος M *Bart.* : εὐκόλως V εἴωθε MV : ἔωθε *Heins.* 189sq.  
*post* σημαίνει *inser.* δὲ V 190 μὲν ὦν *om.* V

Some say that if hail seems to appear among bright coals this is 25  
generally a sign of hail to come; but if there is an appearance (in  
the fire) just as of many small bright millet seeds this is a sign of  
fair weather if there is a wind, and of rain or wind if there is no  
wind. It is better for plants and animals if the rain comes first from  
the north than if it comes from the south; for it should be sweet  
rather than briny to the taste. Moreover, generally a “northern  
season” is overall better and even more salubrious than a southern  
one. And whenever sheep or goats copulate, this is a sign of a long  
winter. These then are the signs of rain. 26

### *Signs of Wind*

The following are the signs of wind. The sun rising with a  
scorching heat without shining brightly is a sign of wind. And if the  
sun appears hollow, this is a sign of wind or rain. And if the sun is  
scorching hot over many days this signals a long period of dryness  
and winds. If at dawn its rays are split, some to the north and some  
to the south, the sun itself in the middle, this is a sign of both rain  
and wind.

There are also signs on the sun and the moon: black ones are 27  
signs of rain, red ones are signs of wind. If the moon stands  
straight when a north wind blows, westerlies are accustomed to  
follow and the month continues to be stormy. But when, on the  
one hand, the (upper) horn projects, the month will have north  
winds; if, on the other hand, the lower one does, the month will  
have southerly winds. But if, up until the fourth day of the month,  
the moon is straight up, without a graceful inward bend, but  
forming a full circular shape, then it customarily is stormy until  
midmonth. A darkish moon signals rain; a reddish one signals  
wind.

- 28 αἶθυιαι καὶ νῆτται [πτερυγίζουσai] καὶ ἄγριαι καὶ τιθασσαι ὕδωρ μὲν σημαίνουσι δυόμεναι, πτερυγίζουσai δὲ ἄνεμον. οἱ κέπφοι εὐδίας οὔσης ὅποι ἂν πέτωνται ἄνεμον προσημαίνουσι. στρουθοὶ χειμῶνος ἅφ' ἐσπέρας θορυβοῦντες ἢ ἀνέμου μεταβολὴν σημαίνουσιν ἢ ὕδωρ ὑέτιον. ἐρωδιὸς ἀπὸ θαλάσσης πετόμε- 195 νος καὶ βοῶν πνεύματος σημείον ἐστι· καὶ ὅλως βοῶν μέγα ἀνεμώδης.
- 29 κύων κυλινδούμενος χαμαὶ ἀνέμου μέγεθος σημαίνει. ἡ ἄμπωτις βόρειον πνεῦμα σημαίνει, ἡ πλημμύρα δὲ νότιον. ἀράχνια πολλὰ φερόμενα πνεῦμα ἢ χειμῶνα σημαίνει. θάλασσα οἰδοῦσα 200 καὶ ἄκται βοῶσαι καὶ αἰγιαλὸς ἡχῶν ἀνεμώδης. ἐὰν μὲν γὰρ ἐκ βορείων πλημμύρα ἦκη εἰς νότιον μεταβάλλει, ἐὰν δ' ἐκ νοτίων ἄμπωτις γένηται εἰς βόρειον μεταβάλλει. καὶ ὁ μὲν βορέας λήγων ἐλάττων ὁ δὲ νότος ἀρχόμενος. παρήλιος ὁπόθεν ἂν ἦ ὕδωρ ἢ 205 ἄνεμον σημαίνει.
- 30 ἡ πέμπτη καὶ δεκάτη ἀπὸ τροπῶν τῶν χειμερινῶν ὡς τὰ πολλὰ νότιος. βορείων δὲ γινομένων ξηραίνει πάντα, νοτίων δὲ ὑγραίνει. ἐὰν δὲ νοτίων ὄντων ψοφῇ τῶν κεκολλημένων εἰς τὰ βόρεια σημαίνει τὴν μεταβολήν· ἐὰν δὲ πόδες ἰδρῶσι νοτία ἢ μεταβολή. τὸ δὲ αὐτὸ σημεῖον καὶ ἐκνεφίου, καὶ ὁδαξῶν τὸν 210 δεξιόν. ἐχίνος ὁ χειρσαῖος σημείον πνευμάτων. ποιεῖται δὲ δύο ὁπὰς ὅπου ἂν οἰκῇ, τὴν μὲν πρὸς βορρᾶν, τὴν δὲ νοτόθεν· ὁποτέραν δ' ἂν ἀποφράττη ἐντεῦθεν πνεῦμα σημαίνει· ἐὰν δ' ἀμφοτέρας ἀνέμου μέγεθος.

191–197 αἶθυιαι ... ἀνεμώδης *om.* V 191 πτερυγίζουσai *secl. Schn.* (4.736) 193 πέτωνται M : πέπωνται *Heins.* 198 ἀνέμου μέγεθος MV *Bart.* : μ. ἁ. PC *Ald.* LT 198–201 *quattuor sententiae quae incipiunt* 1. ἡ ἄμπωτις, 2. ἀράχνια, 3. θάλασσα, 4. ἐὰν μὲν (MV *Bart.*) *ordinat* 1.4.2.3 *Schn.*, 2.1.4.3 *Wi.* 198 ἡ V *Gryn. typograph. in marg.* : ὁ M 199 ἡ *om.* M 200 οἰδοῦσα MV : αἰοδοῦσα SNQ 201 αἰγιαλὸς V *Ald.* LT : αἰγιαλοὺς M γὰρ *om.* V *Bart.* 202 μεταβάλλει M : –βάλλει V 203 γένηται V : γίν– M μεταβάλλει M : –βάλλει V λήγων V *Ald.* LT : λήγον M 204 ὁπόθεν M *Bart.* : ὅθεν V 206–209 ἡ ... μεταβολήν *om.* V 206 πέμπτη *Ald.* L *Bart.* : πεμπτικὴ M τροπῶν *Schn.* (4.738) : τριῶν M *Bart.* 208 *ante* τῶν *inser.* τι *Heins.* 209 βόρεια *Furl.* : νότια M *edd. cett. Bart.* δὲ *om.* V ἰδρῶσι M *Bart.* : ἰδρᾶσιν V : οἰδῶσι *Ald.* L : ἴδωσι C 209sq. νοτία ἢ μεταβολή M *Bart.* : ἔστιν ἡ μεταβολή νοτία V 210sq. τὸ ... δεξιόν *om.* V 211 *post* δεξιόν *lac. stat. Schn.* ὁ *om.* V σημείον πνευμάτων V : 211sq. ποιεῖται ... νοτόθεν *om.* V 213 δ' ἂν *om.* V *Bart.* ἀποφράττη M *Bart.* : –φράττων V ἐντεῦθεν πνεῦμα σημαίνει M *Bart.* : τὴν ἑαυτοῦ κατάδυσιν, καὶ τὰ πρὸς αὐτὴν τετραμμένα πνεύματα μηνύει V ἐὰν M : εἰ V

Shearwaters and ducks (both wild and tame) signal rain by diving, 28 and wind by flapping their wings. During calm weather *kepphoi* signal wind by the direction in which they fly. Sparrows chirping noisily on a winter's evening signal either a change in the wind or rain. A heron squawking while flying from the sea is a sign of breeze; and in general it is a sign of wind *whenever* it squawks loudly.

A dog rolling on the ground signals a great amount of wind. 29 Ebb tide signals a north wind, high tide a south wind. Many spiderwebs in motion signal wind or storm. A swelling sea, roaring headlands, and resounding strands are signs of wind. A high tide signals a north wind, An ebb tide, on the other hand, signals a south wind. And the north wind is weaker as it abates, the south wind when it begins. A mock sun signals rain or wind wherever it is in the sky.

The fifteenth day after the winter solstice is usually one of 30 southern winds. But if northerlies blow, everything dries up, whereas if southerlies blow, all is moist. And if while a south wind is blowing there is a noise from the glued joints, this signals a turn to northerlies. If feet sweat, the wind turns to a southerly. This same thing is also a sign of a hurricane, as too if someone feel pain in his right ⟨foot⟩. The hedgehog is a sign of wind: it makes two openings wherever it dwells, one to the north and the other to the south, and it signals the direction of the wind by whichever it shuts up; if it closes both this is a signal of much wind.



- 31 ἔάν ὄρος προβοῶ ἄνεμον προσημαίνει. ἔάν ἐν θαλάττῃ ἐξ- 215  
αἴφνης πνεύματος γαλήνῃ γένηται μεταβολὴν πνεύματος ἢ ἐπί-  
δοσιν. ἔάν ἄκραι μετέωροι φαίνωνται ἢ νῆσοι ἐκ μιᾶς πλείους  
νοτίαν μεταβολὴν σημαίνει· γῆ δὲ μέλαινα ὑποφαινομένη βόρει-  
ον, λευκὴ δὲ νότιον. αἱ ἄλλω περὶ τὴν σελήνην πνευματώδεις μᾶλ-  
λον ἢ περὶ ἥλιον· σημαίνουσι δὲ πνεῦμα ῥαγεῖσαι περὶ ἄμφω, καὶ 220  
ἢ ἂν ῥαγῇ ταύτῃ πνεῦμα. ἐπινεφέλων ὅθεν ἂν ἀνατέλληται ἐν-  
τεῦθεν ἄνεμος. αἱ κηλάδες νεφέλαι θέρους ἄνεμον σημαίνουσιν.
- 32 ἔάν ἀστραπὴ πανταχόθεν γίνηται ὕδωρ σημαίνει, καὶ ὅθεν 225  
ἂν αἱ ἀστραπαὶ πυκναὶ γίνωνται ἐντεῦθεν πνεύματα γίνεται.  
θέρους ὅταν ἀστραπαὶ καὶ βρονταὶ γίνωνται ἐντεῦθεν πνεύματα 225  
γίνεται ἰσχυρά· ἔάν μὲν σφόδρα καὶ ἰσχυρὸν ἀστράπτῃ θάπτον  
καὶ σφοδρότερον πνεύσουσιν, ἔάν δ' ἡρέμα καὶ μανῶς, κατ' ὀλί-  
γον. τοῦ δὲ χειμῶνος καὶ φθινοπώρου τοῦναντίον· παύουσι γὰρ  
τὰ πνεύματα αἱ ἀστραπαί· καὶ ὅσῳ ἂν ἰσχυρότεραι γίνωνται  
ἀστραπαὶ καὶ βρονταὶ τοσούτῳ μᾶλλον παύονται· τοῦ δ' ἔαρος 230  
ἦττον, ἂν ταυτὰ σημεία γένηται ὥσπερ καὶ χειμῶνος.
- 33 ἔάν νότου πνέοντος βορρᾶθεν ἀστράπτῃ παύεται· ἔάν δ' 235  
ἔωθεν ἀστράπτῃ εἴωθε παύεσθαι τριταῖος, οἱ δὲ ἄλλοι πεμπταῖοι  
ἐβδομαῖοι ἐναταῖοι, οἱ δὲ δειλινοὶ ταχὺ παύονται. οἱ βορέαι  
παύονται ὥς ἐπὶ τὸ πολὺ ἐν περιτταῖς οἱ δὲ νότοι ἐν ἀρτίαις. 235  
ἄνεμοι αἴρονται ἅμ' ἡλίῳ ἀνατέλλοντι καὶ σελήνῃ. ἔάν δ' ἀνατέλ-

215 προβοῶ M<sup>Vp.c.</sup> *Bart.* : προσβορῶ P<sup>a.c.</sup> : πρὸς βορᾶ P<sup>p.c.</sup> C : πρὸς βορῶ *Ald.*  
L : πρὸς βορρεῖν T : πρὸς τῇ κορυφῇ βοῶ *tent. Schn.* (5.168) προσημαίνει  
M : σημαίνει V 216 πνεύματος<sup>1</sup> *secl. Bonav.* γένηται MV : γίνηται T *Schn.* :  
γίνεται PC *Ald.* L 217 ἢ ... πλείους *om.* V *ante* νῆσοι *inser.* αἱ M, καὶ *Wi.*  
218 δὲ *Bart.* : τε M : *om.* V 218sq. ὑποφαινομένη βόρειον MV *Bart.* : β. ὕ. *Ald.*  
LT : βόρειον *secl. Schn.* (5.168) 219 ἄλλω V : ἄλωνες M *Bart.* τὴν *om.* V  
221 ἀνατέλληται V PC *Ald.* LT : -τέλληται M : -τέλλῃ τι *Bö.* 84 222 αἱ ...  
σημαίνουσιν *om.* V 223 γίνηται M : γέν- V 224 ἂν V C *Ald.* L : ἔάν MP :  
*om.* T γίνεται M : γίνονται V 225 ὅταν MV *Bart.* : ὅθεν ἂν *Schn.* (4.740)  
226 γίνεται M : γίνονται VN : γένηται P 227 πνεύσουσιν M : πνέουσιν V  
*Bart.* ἔάν M : εἰ V 231 ἂν ... χειμῶνος *om.* V γένηται ὥσπερ *nos* : λέγω  
ὥσπερ M : *sicut Bart.* 232 βορρᾶθεν VNC *Ald.* LT : βόρρανθεν M :  
βόρραθεν *Schn.* ἀστράπτῃ M : -άψη V δ' *ex autem Bart. nos* 233 ἔωθεν  
ἀστράπτῃ *Schn.* (5.LVII.168) *ex ab oriente coruscat Bart.* : ἔως ἀστραπαῖος MV  
234 ταχὺ VSNFQAP<sup>p.c.</sup> C *Ald.* LT *Bart.* : παχὺ MPB βορέαι M<sup>p.c.</sup> : βοραῖοι V  
235 νότοι *Schn.* : νότιοι MV 236 αἴρονται *Ald.* LT : ἄρονται M : ἄρχονται V  
*Bart.* δ' *ex autem Bart. nos* 236sq. ἀνατέλλων V *Ald.* LT *Bart.* : -οντ M :  
-ονται SNFQABPC

If a mountain roars it signals a wind to come. If on the open sea a sudden calm occur it signals a change ⟨in direction⟩ of the wind or an increase. If headlands appear to hang in midair, or if instead of one island there appear to be more than one, this signals the onset of a southern wind. But if the land appears somewhat dark, it signals a wind from the north; but if the land appears bright, the wind will come from the south. Halos around the moon are signs of wind, more so than halos around the sun. But if the halos around either are broken, they signal wind, the location of the break being the location of the wind. Cloudiness when ⟨the sun⟩ rises indicates the direction whence wind will arise. Mottled clouds in summer signal wind.

If lightning occurs all around, it signals rain; and from whatever direction the bolts come thick and fast will come winds. In summer lightning and thunder also give the direction of strong winds. If the lightning is frequent and strong, winds will blow faster and stronger. But if, on the other hand, the lightning is mild and infrequent, winds will be of little account. In winter and fall, though, the opposite occurs, for lightning puts a halt to the winds, and the stronger are the lightning and thunder, the sooner the winds are halted. In spring, though, if the signs are the same, the winds halt even less than in winter.

If lightning flashes in the north while Notos blows, it ⟨the wind⟩ ceases. If lightning flashes at dawn, it ⟨the wind⟩ usually ceases two days later, whereas other winds cease on the fourth, sixth, or eighth day, although late-afternoon winds quickly cease. North winds cease for the most part on odd-number days, south winds on even-numbered days. Winds start up with the rising of the sun and

λων ὁ ἥλιος καὶ σελήνη παύσωσιν ἐπιτείνει τὰ πνεύματα· σελήνης δὲ ληγούσης λήγει μᾶλλον τὰ πνεύματα. χρονιώτερα δὲ καὶ ἰσχυρότερα τὰ πνεύματα γίνεται τὰ ἡμέρας ἢ νύκτωρ ἀρχόμενα.

34 ἔαν ἐτησίαι πολὺν χρόνον πνεύσωσι καὶ μετόπωρον γένηται 240  
ἀνεμῶδες ὁ χειμὼν νήνεμος γίνεται, ἔαν δ' ἐναντίως καὶ ὁ χειμὼν ἐναντίος. πρὸς κορυφῆς ὄρους ὀπόθεν ἂν νεφέλη μηκύνηται ταύτῃ ἄνεμος πνευσεῖται. αἱ νεφέλαι ἐπὶ τῶν ὀπισθεν προσίσχυσαι καὶ ἐντεῦθεν πνευσοῦνται. Ἄθως μέσος διεξευγμένος νότιος καὶ ὄλως τὰ ὄρη διεξωσμένα νότια ὡς τὰ πολλὰ. οἱ κομηταί 245  
ἀστέρες ὡς τὰ πολλὰ πνεύματα σημαίνουσιν, ἔαν δὲ πολλοὶ καὶ αὐχμόν. μετὰ χιόνα νότος, μετὰ πάχνην βορέας εἴωθε πνεῖν. μύκητες ἐπὶ λύχνου νότιον πνεῦμα ἢ ὕδωρ σημαίνουσιν.

35 αἱ δὲ στάσεις τῶν πνευμάτων οὕτως ἔχουσιν ὡς ἐν τῷ 250  
γράμματι διώρισαι. τῶν δ' ἀνέμων ἔτι πνέουσι τοῖς ἄλλοις ἐπιπίπτουσι μάλιστα ἀπαρκτίας, θρακίας, ἀργέστης. ὅταν δὲ μὴ ὑπ' ἀλλήλων διαλύωνται τὰ πνεύματα ἀλλ' αὐτὰ καταμαρανθῶσι μεταβάλλουσιν εἰς τοὺς ἐχομένους ἐπὶ δεξιᾷ ὥσπερ ἡ τοῦ ἡλίου ἔχει φορά. ὁ νότος ἀρχόμενος ξηρός, τελευτῶν δὲ ὑγρός. καὶ ὁ εὖρος. ὁ δ' ἀπηνιότης ἀπ' ἀνατολῆς ἰσημερινῆς ὕδατῶδης· διὰ 255  
λεπτῶν δ' ἄγει τὰ ὕδατα.

36 ὑγροὶ δὲ μάλιστα ὃ τε καικίας καὶ λίψ· χαλαζώδης δ' ὃ τε 250  
ἀπαρκτίας καὶ θρακίας καὶ ἀργέστης· νιφετώδης δὲ ὃ τε μέσης [ἢ βορέας] καὶ ἀπαρκτίας· καυματώδης δὲ νότος καὶ ζέφυρος

237 ὁ *om.* V *ante* παύσωσιν *inser.* μὴ *Schn.* (2.602, 5.LVII.168) 237sq. σελήνης ... πνεύματα *om.* C *Ald.* LT 238 ληγούσης λήγει *nos* : φθινούσης λήγει M : ληγούσης ἤτοι φθινούσης, λήγει V : diminuta finiunt (fiunt *Bart.Z*) *Bart.* 239 τὰ<sup>II</sup> *om.* V 240 ἐτησίαι M *Bart.* : ἔτη *spat. vac. ca. 2 litt.* V : boreae temporales *Bart.* 241 ἐναντίως M : ἐναντίος V 242 ἐναντίος V *Ald.* LT : ἐναντίως M κορυφῆς ὄρους M : κορυφῆν ὁ. V : κορυφὰς ὁ. *Schn.* : a vertice montis *Bart.* 243 ἐπὶ *nos* : ἐκ MV *Bart.* 244 ἐντεῦθεν *nos* : ὀπισθεν MV : a posteriori *Bart.* 244sq. Ἄθως ... πολλὰ *om.* V 244 Ἄθως M *Bart.* *Schn.* (5.LVII.169) : *om.* *Ald. spat. vac. ca. 8 litt.* LT,\* *Gryn.*, † *Furl.* : Ὑμηττος *Furl. in notis Schn.* 244 μέσος M *Bart.* : Μύσιος *tent. Bonav.* 247 εἴωθε *Wi.* : εἰώθασιν MV : consuevit *Bart.* 248 μύκητες ... σημαίνουσιν *om.* V 250 πνέουσι V : πνεύσουσι M 251 θρακίας M : θρασκίας V ἀργέστης M : ἀργέτης V 253 τοὺς ἐχομένους MV : τὴν ἐχουμένην *Furl.* 255 ἀπηνιότης M : ἀφ— V 257 ὃ τε V *Bart.* : *om.* M 258 θρακίας M : θρασκίας V ἀργέστης M : ἀργέτης V νιφετώδης VPC *Ald.* LT : —εις M 259 ἢ βορέας *secl. Ho.* : καὶ βορρᾶς V καυματώδης VPC *Ald.* LT : —εις M καὶ<sup>II</sup> *om.* V

moon. If the sun and moon rising stop the winds, they increase in intensity. As the moon wanes, winds wane more. Winds that start up during the day last longer and are stronger than those those beginning at night.

If etesian winds blow for a long time and there is a windy 34 autumn, the winter will be windless. But if the opposite occurs, the winter will turn out opposite as well. A wind will blow along the path from which a cloud stretches out from the peak of a mountain. Clouds sitting on the back ⟨of mountains⟩ will also blow from this direction. When Mt. Athos is girded around its middle, it will produce rain; and in general mountains ⟨so⟩ girded will lead to rain. Comets generally indicate winds, and, if there are many of them, drought as well. After snow a south wind is likely to blow; after frost a north wind. Snuff on a lamp signals either wind or rain from the south.

The positions of the winds are as defined in the figure. Of all 35 the winds the ones that most often collide with others while they are still blowing are Aparktias, Thrakias, and Argestes. But when winds are not neutralized by one another but die down by themselves, they change into the next ones on the right—just like the motion of the sun. When Notos begins it is dry; when it ends it is moist. Euros likewise. Apeliotes, coming from where the sun rises, is wet, but its rains are gentle. The wettest winds are Kaikias 36 and Lips. Aparktias, Thrakias, and Argestes bring hail. Meses and Aparktias bring snow. Notos, Zephyros, and Euros bring heat. The

- καὶ εὖρος· οἱ μὲν οἷς ἂν ἐκ πελάγους προσπίπτωσιν, οἱ δὲ οἷς ἂν 260  
 διὰ γῆς. δασύνουσι δ' οὐρανὸν νέφεσι καὶ καλύπτουσι καικίας  
 μάλιστα εἴτα λίψ. καὶ οἱ μὲν ἄλλοι ἄνεμοι ἀφ' ἐαυτῶν τὰ νέφη  
 ὠθοῦσι, καικίας δὲ μόνος πνέων ἐφ' ἐαυτόν. αἶθριοι δὲ μάλιστα  
 θρακίας καὶ ἀργέστης καὶ τῶν λοιπῶν ἀπαρκτίας· ἐκνεφαίαι δὲ  
 μάλιστα ὅ τε ἀπαρκτίας καὶ ὁ θρακίας καὶ ὁ ἀργέστης. 265
- 37 γίνονται δὲ ἐκνεφαίαι ὅταν εἰς ἀλλήλους ἐμπίπτωσι πνέοντες  
 μάλιστα μὲν μετοπώρου, τῶν δὲ λοιπῶν ἕαρος. ἀστραπαῖος δὲ  
 θρακίας καὶ ἀργέστης καὶ ἀπαρκτίας καὶ μέσης. ἐὰν ἐν τῇ  
 θαλάσῃ πάπποι φέρονται πολλοὶ οἱ γινόμενοι ἀπὸ τῶν ἀκαν-  
 θῶν ἄνεμον σημαίνουσιν ἔσεσθαι μέγαν. ὅθεν ἂν ἀστέρες 270  
 διέγνῃσιν πολλοὶ ἄνεμον ἐντεῦθεν· ἐὰν δὲ πανταχόθεν ὁμοίως  
 πολλὰ πνεύματα σημαίνουσιν· πνευμάτων μὲν οὖν σημεῖα ταῦτα.
- 38 χειμῶνος δὲ τάδε. ἥλιος δυόμενος εἰς μὴ καθαρὸν. καὶ ὥς ἂν  
 μερισθῇ δυόμενος οὕτως αἱ ἡμέραι ἐπιτελοῦνται. οἷον ἐὰν τὸ  
 τρίτον μέρος ἀπολειφθῇ ἢ τὸ ἥμισυ. σελήνιον ἐὰν ὀρθὸν ἢ μέχρι 275  
 τετράδος καὶ εἰ εὐκυκλον χειμάσει μέχρι διχοτόμου. γέρανοι ἐὰν  
 πρῶτ' πέτῳσιν καὶ ἀθρόαι πρῶτ' χειμάσει, ἐὰν δὲ ὀψὲ καὶ πολὺν  
 χρόνον ὀψὲ χειμάσει. καὶ ἐὰν ἀποστραφῶσι πετόμεναι χειμῶνα  
 σημαίνουσι.
- 39 χῆνες βοῶντες μᾶλλον ἢ περὶ σίτου μαχόμενοι χειμέριον. 280  
 σπίνος [καὶ στρουθὸς] σπίζων ἔωθεν χειμέριον. ὄρχιλος ὥς εἰσιῶν

260sq. οἱ<sup>1</sup> .... γῆς *om.* V 260 ἂν<sup>11</sup> *Wi.* : ἐὰν M 263 μόνος VT *Schn.*  
 (5.LVIII.169) : μόνον M ἐφ' V : εἰς M *ad se Bart.* 264 θρακίας M :  
 θρασκίας V ἀργέστης M : ἀργέτης V τῶν λοιπῶν *om.* V ἀπαρκτίας M :  
 ἀπαρτίας V 265 θρακίας M : θρασκίας V ὁ ἀργέστης M : ἀργέτης V 268  
 θρακίας M : θρασκίας V ἀργέστης M : ἀργέτης V 269 θαλάσῃ M :  
 θαλάττῃ V 270 σημαίνουσιν ἔσεσθαι μέγαν M : μέγα σ. V 271 διέγνῃσιν  
 πολλοὶ M : π. δ. V : *videntur currere Bart.* ὁμοίως MV *Bart.* : *secl. Schn.*  
 (5.LVIII.169) 273sq. καὶ ὥς ἂν μερισθῇ MV *Bart.* : καὶ ὥσῃ μερισθῇ *delib.*  
*Schn.* (5.169) 274 οἷον *om.* V ἐὰν *nos* : εἰ M *Bart.* : εἴτε V 275 τρίτον M  
*Bart.* : ἥμισυ V ἀπολειφθῇ MV : —λειφθείη *Schn.* (4.743) : —ληφθείη *non*  
*prob. Schn.* (5.169) *sed tent. Ho. in app. crit.* ἢ τὸ ἥμισυ M *Bart.* : εἴτε τὸ τρίτον  
 V *ante* σελήνιον *inser.* τὸ *Heins. sed non prob. Schn.* (4.743) σελήνιον ἐὰν  
 ὀρθόν M : σελήνη ἐὰν ὀρθή V 276 εἰ εὐκυκλον M *Bart.* : εὐκυκλος V 277  
 ἀθρόαι V : —οι M 278 ἀποστραφῶσι MV : ὑποστραφῶσι *Schn.* (5.169) *e*  
*revertantur Bart.* πετόμεναι V *Schn.* : —οι M : πετώμενοι *Ald.* L 280 ἢ MV :  
 καὶ ἢ *Schn.* : κλαγγῇ *Bö.* 84 : *om. Bart.* περὶ σίτου *nos* : περὶ σίτ' M : περὶ  
 σίτου SNFQABPC *Ald.* LT, *prob. Schn.* (5.169) *e circa cibum Bart.* : ἐπὶ σίτῳ V  
 281 καὶ στρουθὸς (MV *Bart.*) *seclusimus* : 281—283 ὄρχιλος ... καὶ<sup>11</sup> *om.* V 281  
 ὥς *secl. Schn.* (4.744)

effects are felt differently, depending on whether they fall upon one from out of the sea or from across land. The winds that most thicken and conceal the sky with clouds are first Kaikias and then Lips. And whereas all other winds drive away clouds, Kaikias alone blows them unto itself. Thrakias and Argestes are the chief winds to bring clear skies; ahead of all the others in this regard is Aparktias. Aparktias, Thrakias, and Argestes are most likely to bring hurricanes.

Hurricanes occur when ⟨winds⟩ fall upon one another while 37 still blowing, chiefly in the fall and, of the other seasons, next in spring. Thrakias, Argestes, Aparktias, and Meses bring lightning. If there are many down-like thistle seeds floating on the sea, they are a sign that a big wind is coming. Wind will come from the quarter of the sky whence many shooting stars come, but shooting stars coming from all directions signal many winds. These, then, are the signs of winds.

### *Signs of Storms*

The following are signs of storm: The sun setting into haze. And 38 the way in which it is divided is the way the days following will turn out. For example, if a third is left out, or half. If the moon, less than full, is straight ⟨up⟩ until the fourth of the month and if it forms a good circle, it will storm until midmonth. If a flock of cranes flies in early morning, it will storm early; but if it flies late and over a long period of time, it will storm late. And if they turn about in flight they signal storm.

Geese honking more than usual when they fight for food are a 39 sign of storm. A sparrow chirping at dawn is a sign of storm. A

καὶ εἰσδυόμενος εἰς ὅπας χειμῶνα σημαίνουσι καὶ ἐριθεὺς ὡσαύτως. κορώνη ἐὰν ταχὺ δις κρώξῃ καὶ τρίτον χειμερία. καὶ κορώνη καὶ κόραξ καὶ κολοῖος ὁψὲ ἔδοντες χειμέριοι. στρουθὸς ἐὰν λευκὸς ἢ χελιδὼν ἢ ἄλλο τι τῶν μὴ εἰωθότων λευκῶν χειμῶνα μέγαν σημαίνουσιν, ὥσπερ καὶ μέλανες ἐὰν πολλοὶ φανῶσιν ὕδωρ.

40 καὶ ἐὰν ἐκ πελάγους ὄρνιθες φεύγωσι χειμῶνα σημαίνουσι. καὶ σπίνος ἐν οἰκίᾳ οἰκουμένη φθεγγόμενος χειμέριον. ὅσα ὕδωρ σημαίνει χειμῶνα ἄγει, ἐὰν μὴ ὕδωρ χιόνα καὶ χειμῶνα. κόραξ φωνὰς πολλὰς μεταβάλλων χειμῶνος χειμέριον. κολοῖοι ἐκ τοῦ νότου πετόμενοι καὶ τευθίδες χειμέριοι. φώκη ἐν λιμένι ἀποψοφοῦσα καὶ πολὺποδα ἔχουσα χειμέριον. καὶ οἱ πλεῦμονες οἱ θαλάττιοι ἐὰν πολλοὶ φαίνωνται ἐν τῷ πελάγει χειμερινοῦ ἔτους σημεῖον. πρόβατα ἐὰν πρῶτ' ὀχεύηται πρῶτον χειμῶνα σημαίνουσι.

41 μετοπώρῳ ἐὰν πρόβατα ἢ βόες ὀρύττωσι καὶ κοιμῶνται ἄθροοι πρὸς ἀλλήλους ἔχοντες τὰς κεφαλὰς τὸν χειμῶνα χειμέριον σημαίνουσιν. ἐν δὲ τῷ Πόντῳ φασὶν ὅταν Ἄρκτοῦρος ἀνατεῖλῃ, θάττον ἐναντίους τῷ βορρᾷ νέμεσθαι. βόες μᾶλλον ἐσθιοντες τοῦ εἰωθότος καὶ ἐπὶ τὸ δεξιὸν κατακλινόμενοι χειμέριον. καὶ ὧτα κροῦων ὄνος χειμέριον καὶ μαχόμενα πρόβατα καὶ ὄρνιθες περὶ σίτου παρὰ τὸ ἔθος ὁμοίως· προπαρασκευάζονται γάρ. καὶ μῦες τρίζοντες καὶ ὀρχούμενοι χειμέριον.

282 ἐριθεὺς *Schn. Bart.* : ἐριθὺς M 284 κορώνη ... χειμέριοι *post* χειμῶνα σημαίνουσι (*lin.* 288) *trsp.* V 284 χειμέριοι M : —ιον V 284—288 στρουθὸς ... καὶ *om.* V 288 σημαίνουσι M : δηλοῖ V *Bart.* : *post* σημαίνουσι *inser.* κορώνη ... χειμέριοι (*lin.* 284) V 289sq. καὶ ... χειμῶνα<sup>11</sup> *om.* V 289 ἐν *Furl. Bart.* : ἐὰν M 290 σημαίνει χειμῶνα ἄγει MV : Fortasse χειμῶνας *Bonav.* 291 φωνὰς πολλὰς M *Bart.* : πολλὰς φωνὰς V μεταβάλλων M : —βάλων V χειμῶνος χειμέριον M : χειμέριον V : χειμῶνος σημεῖον *Schn.* (5,170) *e* *tempestatis signum Bart.* 292 νότου MV *Bart.* : νομοῦ *Maass* χειμέριοι M : —ιον V φώκη MV *Bart.* : φωνή PC *Ald.* LT : *mortua Bart.MBAVGEF* 293 καὶ πολὺποδον (—α *nos*) ἔχουσα M : *om.* V : κ. πολὺποκλον ἔ. P : κ. πολὺπλοκον ἔ. *Furl.* : κ. π. ἡχοῦσα *Schn.* (5.LVIII, 170) : κ. πολὺποδες \* \* ἔχουσα *Coray* καὶ οἱ πλεῦμονες οἱ M : κ. οἱ πνεῦμονες οἱ *Ald.* LT : πνεῦμονες V 295 πρῶτον M : πρῶτιμον V 298 ἀλλήλους MV : ἀλλήλων SNFQAPC *Ald.* LT : *invicem Bart.* 299 σημαίνουσι V *Bart.* : σημαίνει M *Bart.GE* 299sq. ἐν ... νέμεσθαι *om.* V 301 τὸ *om.* V 302 ὧτα κροῦων ὄνος M : δ. ὦ. κ. V *Bart.* χειμέριον M *Bart.* : τὸ αὐτὸ V καὶ<sup>11</sup> *om.* V 303 ὁμοίως V : *om.* M *Bart.* 304 μῦες M : αἱ μ. T : οἱ μ. V τρίζοντες PC *Ald.* LT : τρίζοντες M : τρύζοντες V

wren and a robin likewise entering and hiding in their lairs signal storm. If a crow cackle twice in quick succession and <then> a third time, this is a sign of storm. And a crow and a raven and a jackdaw singing late are signs of storm. If a sparrow is white, or a swallow or any other of those not normally white, they signal a great storm, just as also black birds appearing in large numbers signal rain.

And if birds flee from the sea they signal storm. And a chaf- 40  
finch singing in an inhabited house is a sign of storm. All that signal rain lead to storm; if not rain then snow and storm. A raven in winter producing many sounds is a sign of storm. Jackdaws flying from the south and cuttlefish are signs of storm. A seal making its loud sound in the harbor while holding an octopus is a sign of storm. And if many jelly fish appear in the sea this is a sign of a stormy season. If the smaller cattle mate early they signal an early winter.

If in fall the small cattle or the cows dig at the earth and bed 41  
down keeping their heads close to one another, they signal that the winter will be stormy. In Pontos, they say that when Arktouros rises, they <the cattle> graze while facing north more hurriedly <than usual>. Cows eating more than usual and lying on their right side are a sign of storm. And an ass snapping his ears is a sign of storm; and likewise cattle and birds fighting for food more than usual, since they are getting prepared in advance. And mice squeaking and dancing are a sign of storm.



- 42 καὶ κύων τοῖς ποσὶν ὀρύττων ὁμοίως καὶ ὀλολυγῶν ἄδουσα 305  
 μόνη ἀκρωρείας χειμέριον. γῆς ἔντερα πολλὰ φαινόμενα χειμῶ-  
 να σημαίνει. καὶ ἐὰν πῦρ μὴ θέλῃ ἄψασθαι χειμέριον. καὶ ἐὰν  
 λύχνος ἄπτεσθαι μὴ ἐθέλῃ χειμῶνα σημαίνει· καὶ τέφρα πηγνυ-  
 μένη νιφετόν σημαίνει. λύχνος εὐδίας ἡσυχῇ καιόμενος χειμῶνα  
 σημαίνει· καὶ ἐὰν μέλαινα φλόγες αἰθύσσωσι χειμέρια. καὶ ἐὰν 310  
 χειμῶνος ὄντος μύκαι μέλαινα ἐπιγένωνται χειμῶνα σημαίνει·  
 καὶ ἐὰν ὥσπερ κέγχροις πολλοῖς κατάπλεως ἦ χειμερίσει· καὶ ἐὰν  
 κύκλω περὶ τὸ λαμπρὸν ὧσιν εὐδίας οὕσης χιονικόν.
- 43 ἢ τοῦ Ὕνου Φάτνη εἰ συνίσταται καὶ ἱσοφρὰ γίνεται χειμῶ-  
 να σημαίνει. καὶ ἐὰν ἀστραπὴ λαμπρὰ μὴ ἐν τῷ αὐτῷ μένῃ χει- 315  
 μέριον. ἐπὶ Πλειάδι δυομένη ἐὰν λάμψῃ παρὰ Πάρνηθα καὶ  
 Βρίλλητον καὶ Ὑμηττον, ἐὰν μὲν ἅπαντα καταλάμψῃ μέγαν χει-  
 μῶνα σημαίνει. ἐὰν δὲ τὰ δύο ἐλάττω, ἐὰν δὲ Πάρνηθα μόνον  
 εὐδιεινόν· καὶ ἐὰν χειμῶνος ὄντος νεφέλῃ μακρὰ ἐπὶ τὸν Ὑμηττον  
 ἦ χειμῶνος ἐπίτασιν σημαίνει. Ἄθως καὶ Ὀλυμπος καὶ ὄλως 320  
 ὀρέων κορυφαὶ κατεχόμεναι ὑπὸ νεφελῶν χειμέριον. ἐὰν εὐδίας  
 γενομένης νεφέλιον φαίνεται ἐν τῷ ἀέρι. παρατεταμένον καὶ  
 τιλλόμενον οὕτω παύεται ὁ χειμῶν.
- 44 ἐὰν τὸ μετόπωρον εὐδιεινὸν παρὰ τὸ εἰκὸς γένηται τὸ ἔαρ  
 γίνεται ψυχρὸν ὥς τὰ πολλὰ. ἐὰν πρῶτ' χειμάζειν ἄρχηται πρῶτ' 325  
 παύεται καὶ ἔαρ καλόν, ἐὰν δὲ τοῦναντίον καὶ ἔαρ οὐ γίνεται.  
 ἐὰν ὁ χειμῶν ὑέτιος τὸ ἔαρ αὐχμηρόν, ἐὰν δ' αὐχμηρὸς ὁ χειμῶν  
 τὸ ἔαρ καλόν. ἐὰν ἡ ἴσχωρία γίνηται ἐπικεικῆς τὰ πολλὰ γίνεται

305 ποσὶν V *Bart.* T : πολλοῖς M ὀρύττων ὁμοίως V : ὀρύττουσα M *Bart.*  
 305–308 καὶ<sup>11</sup> ... καὶ *om.* V 306 ἀκρωρείας M : –ίας *Schn.* (4.745) 307 πῦρ  
 M : πυρῶν SNFQAPC *Ald.* LT ἄψασθαι *nos* : σκέψασθαι M *Bart.* : ἄπτεσθαι  
*Furl.* : ἄψεσθαι *Heins.* 309 σημαίνει *om.* M λύχνος *Furl.* : λυχνίας M  
 309–321 λύχνος ... χειμέριον *om.* V 309 εὐδίας *Furl.* : ὠδίας M : serenitate  
*Bart.* ἡσυχῇ *nos* : –αῖος M : quiete *Bart.* καιόμενος *Ald.* LT : καιόμενος M :  
*adurens Bart.* 310 καὶ<sup>1</sup> ... χειμέρια M : *om. edd., restit. Schn.* (5.170) *e transl.*  
*lat. Bart. et ἀπαίσσῳσι e urantur Bart. propos.* 311 ἐπιγένωνται M : –γίν-  
*Schn.* 312 ἐὰν ὥσπερ M *Bart.* : ὥσπερ ἐὰν *Wi.* 1866 κατάπλεως M :  
 καταπλέων *Heins.* 316 λάμψῃ *P<sup>a.c.</sup>C Ald.* LT : λήψῃ M παρὰ *nos* : κατὰ  
*Heins.* : *om.* M 317 Βρίλλητον *nos* : Βρίληττον M : Βρίλητον T καταλάμψῃ  
*Wi.* : –λήψῃ M 320 ἦ M : ἦ PC *Ald.* L : secl. *Furl., om. T edd. cett., restit.*  
*Schn.* (4.747) 322 γενομένης M : γίν- VPC *Ald.* LT 325 ἄρχηται MV : ἄρξ-  
*Ald.* LT 326 οὐ γίνεται MV *Bart.* : ὅψιον ἔσται *Wi.* 327 ἐὰν ὁ MV : ἐὰν PC  
*Ald.* L : καὶ T : si autem *Bart.* 328 καλόν MV *Bart.* : οὐ καλόν T 328sq. ἐὰν  
 .... λιμός *om.* V 328 σχωρία M : ὀπώρα *Schn.* (4.747, 5.LVIII.170) : erubigo  
*Bart.* γίνηται M : γίνεται PC *Ald.* L

And likewise a dog digging with its paws and a tree frog singing 42 solo at the crack of dawn are signs of storm. Many “earth guts” [i.e., worms] appearing signal storm. And if a fire resists kindling it is a sign of storm; and if a lamp is hard to light it signals storm. And the build up of ash signals snow. A lamp sputtering while burning during fair weather signals storm. And flames flickering darkly are signs of storm. And if during winter black snuff develops it signals storm. And if it is as though filled with many millet seeds, it will storm. And if they ⟨the millet seed-like objects⟩ surround the flame during fair weather, this is a sign of snow.

If the Ass’ Manger draws itself together and become dark, it 43 signals storm. And if brilliant lightning does not remain in the same place, it is a sign of storm. If at the setting of the Pleiades it flashes on Mts. Parnes, Brilettos, and Hymettos, then (i) if it flashes over all three it signals a mighty storm, (ii) if over two of them, a smaller storm, and (iii) if only over Parnes, fair weather. And if during a storm a large cloud covers Hymettos it signals an increase in intensity of the storm. Mts. Athos and Olympos, and mountain peaks in general when covered by clouds, are signs of storm. If, when the weather clears, a cloud is visible stretched out through the sky and looking plucked, the storm is not yet over.

If the fall turns out unusually fair, the ⟨following⟩ spring will 44 generally be cold. If winter begins early it ends early and the spring is fair; if the reverse, there will be no spring. If winter is rainy, the spring will be dry; but if the winter is dry, the spring will be fair. If the late summer is fair, famine will befall the cattle. If the spring

τοῖς προβάτοις λιμός. ἐὰν δὲ τὸ ἔαρ καὶ τὸ θέρος ψυχρὰ γίνηται  
ἢ τε ὁπώρα γίνεται καὶ τὸ μετόπωρον πνιγηρὸν καὶ οὐκ 330  
ἀνεμῶδες.

45 οἱ πρῖνοι ἐὰν εὐκαρπῶσι χειμῶνες πολλοὶ σφόδρα γίνονται.  
ἐὰν ἐπὶ κορυφῆς ὄρους νέφος ὀρθὸν στῇ χειμῶνα σημαίνει, ὅθεν  
καὶ Ἀρχίλοχος ἐποίησε «Γλαῦχ' ὄρα· βαθὺς γὰρ ἤδη κύμασι  
ταράσσεται πόντος, ἀμφὶ δ' ἄκρας ὀρθὸν ἴσταται νέφος», ὃ ἐστὶ 335  
σημεῖον χειμῶνος. ἐὰν δ' ὁμόχρως ᾗ ὑμένι λευκῷ χειμέριον. ὅταν  
ἐστώπων νεφῶν ἕτερα ἐπιφέρηται, τὰ δ' ἡρεμεῖ, χειμέριον.

46 ὁ ἥλιος ἐὰν χειμῶνος διαλάμψας πάλιν ἀποκρυφθῇ καὶ τοῦτο  
ποιήσῃ δις ἢ τρίς ἡμέρα χειμέριος δίδεισιν. ὁ τοῦ Ἑρμοῦ ἀστήρ  
χειμῶνος μὲν φαινόμενος ψύχη σημαίνει, θέρους δὲ καῦμα. ὅταν 340  
μέλιτται μὴ ἀποπέτνυνται μακρὰν ἀλλ' αὐτοῦ ἐν τῇ εὐδίᾳ πέτνυν-  
ται χειμῶνα ἐσόμενον σημαίνουσι. λύκος ὠρυόμενος χειμῶνα  
σημαίνει τριῶν ἡμερῶν. λύκος ὅταν πρὸς τὰ ἔργα ὀρμᾷ ἢ εἰσὶν  
χειμῶνος ὥρα χειμῶνα σημαίνει εὐθύς.

47 ἔστι δὲ σημεῖα χειμῶνων μεγάλων καὶ ὄμβρων καὶ ὅταν γί- 345  
νωνται ἐν τῷ μετοπώρῳ πολλοὶ σφῆκες καὶ ὅταν ὄρνιθες λευκοὶ  
πρὸς τὰ ἐργάσιμα πλησιάζωσι καὶ ὅλως τὰ ἄγρια θηρία ἐὰν πρὸς  
τὰ ἐργάσιμα σπεύδοντα βόρειον καὶ χειμῶνος μέγεθος σημαίνει.

329 δὲ *om.* M ἔαρ καὶ τὸ θέρος M *Bart.* : θέρος κ. τ. ἔαρ V γίνηται M :  
γένωνται V 330 τὸ *om.* M, *restit. Schn.* (4.747) 332 εὐκαρπῶσι M *Bart.* :  
καρπῶσι V 333–336 ὅθεν ... χειμέριον *om.* V 334sq. Archilochus fr. 105 West  
334 Γλαῦχ' *Ald.* LT : γλαῦχ' M 335 δ' *Furl.* : δὲ M (*contra metrum; vide infra*  
*comm.*) ἄκρας M : ἄκρα *Schn.* (4.748) *Wi. Ho.* *post ἄκρας inser.* γυροῦν  
*Schn.* (4.748) 335sq. ὃ ἐστὶ σημεῖον M : Σῆμα χειμῶνος *Schn.* (4.748) : quae  
ostendit *Bart.* 336 ἐὰν δ' ὁμόχρως ᾗ *Vasiloudi* : ἐὰν δ' ὁμόχρων (sc. νέφος) ᾗ  
*Wi.* : ἐὰν ὁπόμοχρως ᾗν M : ἐὰν ὁπόμοχρως ᾗ T : ἐὰν ὁ πομόχρως ᾗ *Gryn.* :  
ἐὰν νεφέλῃ ὁμόχρως ᾗ *Furl.* : καὶ ἐὰν ὁμόχρως ᾗ *tent. Schn.* (5.170) *ex et si*  
*colorabuntur Bart.* 337 ἡρεμεῖ χειμέριον V : ἡρεμῇ χειμέρια M : ἡρεμῇ χει-  
μέριον T 338 ὁ ἥλιος M *Furl.* : *om. Bart. Ald. spat. vac. ca. 6 litt.* LT : οὗ V  
ἀποκρυφθῇ M : ἀποκρυβῇ V 339 ποιήσῃ PC *Ald.* LT : ποιήσει MV 339sq.  
δίδεισιν ... καῦμα *om.* V 341sq. μακρὰν ... πέτνυνται *om.* V 341 αὐτοῦ M : ἐπ'  
αὐτοῦ τοῦ σημείου *Furl.* : ἐπ' αὐτοῦ τοῦ σημῆνους *Heins.* : *in eodem Bart.*  
341sq. πέτνυνται PC *Ald.* LT : πέτονται M 342 σημαίνουσι V : σημαίνει M  
343sq. τριῶν ... εὐθύς *om.* V 343 τριῶν ἡμερῶν. λύκος *nos* : λ. τ. ἡ. M *Bart.* :  
διὰ τ. ἡ. λ. *Schn.* ὀρμᾷ *Furl.* : ὥρα M : *movetur Bart.* εἰσὶν *Schn.* (5.171) *ex*  
*intrat Bart.P* : εἴσω M *Bart.* 345 σημεῖα V : σημεῖον M χειμῶνων μεγάλων  
M *Bart.* : μ. χ. V *Bart.P* καὶ<sup>II</sup> *om.* V 345sq. γίνωνται V : γέν— M 347 ἐὰν  
*om.* V 348 τὰ *om. Heins. edd. cett., restit. Schn.* (5.LVIII) σπεύδοντα *om.* M

and summer are cold, late summer and fall will be stifling hot and windless.

If the evergreen oaks have good fruit, frequent storms occur. If <sup>45</sup> a cloud stands upright on a mountain peak, it signals storm; hence Archilochos wrote, "Glaukos, look! The deep sea is already stirred up with waves, and around the heights a cloud stands straight up" (fr. 105 West), which is a sign of storm. If it is uniformly colored with a white covering, it is a sign of storm. When clouds move towards other clouds that remain at rest, they are signs of storm.

If during winter the sun shines clear and then is covered up, <sup>46</sup> and this happens two or three times, the day will be stormy throughout. If Mercury is visible in winter it signals cold, if in summer it signals heat. When bees during fair weather do not fly far away but only in the same spot, this signals that a storm is coming. A howling wolf signals a storm within three days. When a wolf runs up to or enters cultivated lands during winter it signals an immediate storm.

It is a sign of big storms and rains, both when many wasps <sup>47</sup> occur in the fall, and when white birds approach cultivated lands; and, in general, if wild animals run toward cultivated lands, they signal a north wind and a great storm. If the parts of Parnes facing

τῆς Πάρνηθος ἐὰν τὰ πρὸς ζέφυρον ἄνεμον καὶ τὰ πρὸς Φύλης  
φράττηται νέφεσι βορείων ὄντων χειμέριον τὸ σημεῖον.

350

- 48 ὅταν πνίγη γίνηται τὰ πολλὰ ἰσχυρῶς, ἀνταποδίδωσι καὶ γί-  
νεται χειμῶν ἰσχυρός. ἐὰν ὕδατα ἐαρινὰ πολλὰ γένηται, καύμα-  
τα ἰσχυρὰ ἐν τοῖς πεδινοῖς καὶ κοίλοις γίνεται. δεῖ οὖν τὴν ἀρχὴν  
ὀρᾶν. ἐὰν τὸ μετόπωρον εὐδιεινὸν γίνηται σφόδρα ἕαρ ὥς τὰ  
πολλὰ γίνεται ψυχρόν· ἐὰν δὲ τὸ ἕαρ ὀψιον γένηται καὶ ψυχρόν,  
ἢ ὁπώρα ὀψία γίνεται καὶ μετόπωρον ὥς τὰ πολλὰ πνιγρόν.

355

- 49 οἱ πρῖνοι ὅταν εὐκαρπῶσι σφόδρα, ὥς μὲν τὰ πολλὰ χειμῶνα  
ἰσχυρὸν σημαίνουσιν, ἐνίοτε δὲ καὶ αὐχμούς φασὶ γίνεσθαι. καὶ  
ἐὰν τις σπάλακα λαβὼν ὑποπάσας ἄργιλον εἰς πιθάκην θῇ ση-  
μαίνει ταῖς φωναῖς αἷς ἀφίησιν ἄνεμον καὶ εὐδίαν. καὶ τὸ παν-  
ταχοῦ δὲ λεγόμενον σημεῖον δημόσιον χειμέριον ὅταν μῦες περὶ  
φορυτοῦ μάχωνται καὶ φέρωσιν.

360

- 50 εὐδίας δὲ σημεῖα τάδε. ἥλιος μὲν ἀνιὼν λαμπρὸς καὶ μὴ καυ-  
ματίας καὶ μὴ ἔχων σημεῖον μηδὲν ἐν ἑαυτῷ εὐδίαν σημαίνει. ὥς  
δ' αὐτως σελήνη πανσελήνῳ. καὶ δυόμενος ἥλιος χειμῶνος εἰς  
καθαρὸν εὐδιεινός, ἐὰν μὴ ταῖς προτέραις ἡμέραις εἰς μὴ καθα-  
ρὸν δεδουκὼς ἤ ἔξ εὐδιῶν· οὕτω δὲ ἄδηλον. καὶ ἐὰν χειμάζοντος ἢ  
δύσις γένηται εἰς καθαρὸν εὐδιεινόν· καὶ ἐὰν δύνων ὁ ἥλιος χει-  
μῶνος ὠχρὸς ᾖ, εὐδίαν σημαίνει.

365

- 51 καὶ ὁ μείς ἐὰν τριταῖος ὢν λαμπρὸς ᾖ εὐδιεινόν. καὶ ἡ τοῦ  
Ὁνου Φάτνη ὅτε ἂν καθαρὰ καὶ λαμπρὰ φαίνεται εὐδιεινόν.  
ἄλλως δὲ ἐὰν ὁμαλῶς παγῇ καὶ μαρानθῇ εὐδίαν σημαίνει. αἱ  
κοιλάδες νεφέλαι χειμῶνος εὐδιειναί. Ὁλυμπος δὲ καὶ Ἄθως καὶ

370

349–354 τῆς ... ὀρᾶν *om.* V 351 γίνηται M : γένηται μετοπώρου *Schn.* (5.171) *e praefocatio fit Bart.* τὰ πολλὰ ἰσχυρῶς M : ἰσχυρὰ ὥς τὰ πολλὰ *Schn.* (5.LVIII.171) : ὥς τὰ πολλὰ *Schn.* (2.603, 5.171) : *ut multum Bart.* 354 γίνηται M : γέν– V *ante* ἕαρ *inser.* τὸ *Schn.* (2.603, 5.LVIII) 356 *ante* μετόπωρον *inser.* τὸ *Schn.* (4.751) ὥς τὰ πολλὰ *om.* V 357sq. οἱ ... καὶ<sup>II</sup> *om.* V 359 σπάλακα V *Furl.* : σπάκα M : σπάκα\* *Gryn* : σκολόπακα *Furl. in notis* ὑποπάσας M : –σπάσας V πιθάκην V : πιθάκην M 361 μῦες MV : σύες *Maass* 363 *ante* εὐδίας *inser.* περὶ εὐδίας σημείων *PC Ald. L* 364 μηδὲν M : οὐδὲν V εὐδίαν σημαίνει *om.* V 364sq. ὥς δ' αὐτως M : ὡσαύτως δὲ καὶ V 365 πανσελήνῳ M : πανσέληνος V καὶ δυόμενος ἥλιος M *Bart.* : ἦ. δ. V 366sq. ἐὰν ... ἄδηλον *om.* V 368 ὁ ἥλιος *om.* M *Bart.* 369 εὐδίαν V *Bart.* (*serenitatem*) : ἐν εὐδίᾳ M *Bart.P* (*in serenitate*) 370 ᾖ *om.* V 370sq. καὶ<sup>II</sup> ... εὐδιεινόν *om.* V 373 κοιλάδες M : κοῖλαι V : κηλάδες *Ho.* 373sq. Ὁλυμπος ... ἔχουσιν M *Bart.* : ὅταν τὰ ὄρη τὰ ὑψηλὰ καθαρὰς ἔχουσιν κορυφάς V

west and toward Phyle are fenced in by clouds while northerlies blow, the sign is for storm.

When there are severe periods of great heat, this is balanced 48 with a severe storm. If it rains a lot in the spring, there are severe heat spells in the plains and hollows. One should, therefore, look to the beginning (of each season). If fall is very fair, the spring for the most part is cold; if the spring is late and cold, summer will end late and the fall for the most part chokingly hot.

When the evergreen oaks produce much fruit, this usually sig- 49 nals a severe winter; and sometimes, they say, a dry spell follows. And if someone take a blind-rat (mole?) and place it in a cask, having first pressed down potter's earth, it (the animal) signals wind and fair weather by the sounds it makes. And mice fighting to carry off tiny scraps, as people everywhere recognize, are a sign of storm.

### *Signs of Fair Weather*

The following are the signs of fair weather. When the sun rises 50 bright but not scorching and without any mark on itself showing, it signals fair weather. Likewise when the full moon rises. And when in winter the sun sets clear, it is a sign of fair weather-unless on the preceding days the sun had gone from fair weather to set where it was unclear; in this case the sign is unsure. And if during a storm the sun sets clear, the sign is for fair weather. And if it is a pale yellow while setting during a storm, it signals fair weather.

And if the moon is bright on the third day it is a sign of fair 51 weather. And when the Ass's Manger is clear and bright it is a sign of fair weather. And if a halo forms and fades away evenly it signals fair weather. Mackerel clouds in winter signal fair weather. And when Mts. Olympus and Athos (and those mountains regularly

ὅλως τὰ ὄρη τὰ σημαντικὰ ὅταν τὰς κορυφὰς καθαρὰς ἔχωσιν  
 εὐδίαν σημαίνει. καὶ ὅταν τὰ νέφη πρὸς τὴν θάλασσαν αὐτὰ 375  
 παραζωννύη εὐδιεινόν. καὶ ὅταν ὕσαντος πρὸς δυσμὰς χαλκῶ-  
 δες τὰ νέφη χρῶμα ἔχῃ, εὐδιεινόν. εὐδία γὰρ ὡς τὰ πολλὰ τῇ  
 ὑστεραίᾳ.

52 ὅταν δὲ ὁμίχλη γένηται ὕδωρ οὐ γίνεται ἢ ἔλαττον. ὅταν  
 γέρανοι πέτῳνται καὶ μὴ ἀνακάμπτῳσιν εὐδίαν σημαίνει· οὐ γὰρ 380  
 πέτονται πρὶν ἢ ἂν πρὸ ἑαυτῶν καθαρὰ ἴδωσι. γλαῦξ ἡσυχαῖον  
 φθεγγομένη ἐν χειμῶνι εὐδίαν προσημαίνει· καὶ νύκτωρ χειμῶνος  
 ἡσυχαῖον ἄδουσα. θαλαττία δὲ γλαῦξ ἄδουσα χειμῶνος μὲν εὐ-  
 δίαν σημαίνει, εὐδίας δὲ χειμῶνα. καὶ κόραξ δὲ μόνος μὲν ἡσυ-  
 χαῖον κράζων, καὶ ἔαν τρεῖς κράξας μετὰ τοῦτο πολλάκις κράξῃ 385  
 εὐδιεινός.

53 καὶ κορώνη ἔωθεν εὐθύς ἔαν κράξῃ τρεῖς εὐδίαν σημαίνει καὶ  
 ἐσπέρας χειμῶνος ἡσυχαῖον ἄδουσα. καὶ ὄρχιλος ἐξ ὅπῃς ἐκπε-  
 τόμενος καὶ ἐξ ἐρκίων καὶ ἐξ οἰκίας ἔξωθεν εὐδίαν σημαίνει. καὶ  
 ἔαν χειμῶνος βορεύοντος βορρᾶθεν ὑπόλαμψις γένηται λευκή, 390  
 νοτόθεν δὲ ἔαν πεφραγμένη ἢ νεφέλη ὀγκώδης, ὡς ἐπὶ πολὺ εἰς  
 εὐδίαν σημαίνει μεταβολήν. καὶ ὅταν βορέας νεφέλας πολλὰς  
 κινῇ ἐκπνέων μέγας εὐδίαν σημαίνει.

54 πρόβατα ὀψὲ ὀχευόμενα εὐδιεινὸν ἀποτελοῦσι τὸ σημεῖον.  
 καὶ βοῦς ἐπὶ τὸ ἀριστερόν ἰσχίον κατακλινόμενος εὐδίαν σημαί- 395  
 νει· καὶ κύων ὡσαύτως· ἐπὶ τὸ δεξιὸν δὲ χειμῶνα. τέττιγες πολλοὶ  
 γινόμενοι νοσῶδες τὸ ἔτος σημαίνουσι. λύχνος χειμῶνος καίόμε-  
 νος ἡσυχᾶος εὐδίαν σημαίνει. καὶ ἔαν ἐπ' ἄκρου οἶον κέγχρους

375 καὶ *om.* V θάλασσαν M : θάλατταν V αὐτὰ *nos* : αὐτὴν MV *Bart.* 376  
 καὶ *om.* V 377 εὐδιεινόν *om.* M *Bart.* 377–379 εὐδία ... ἔλαττον *om.* V  
 380sq. οὐ ... ἴδωσι *om.* V 381 πρὸ ἑαυτῶν *nos* : πετόμενοι M : –νοι *Wi.* :  
*utique volantes Bart.* 384 μόνος V *Bart. Ald.* LT : μόνως M 385 καὶ *om.* V  
 τρεῖς MV : *quis Bart.* κράξας MV *Bart.* : κράξῃ *Schn.* (5.172) 386 εὐδιεινός  
 M *Bart.* (*serenus*) : –νόν V *Bart. P* (*serenum*) 387 ἔωθεν *MP.c.V Schn.* (5.172) :  
 ὄθεν *Ald.* LT 388 ἡσυχᾶον *om.* V 388–393 καὶ ... σημαίνει *om.* V 389 ἐξ  
 ἐρκίων *Schn.* (4.754) : ἐξ ὄρκίων M : *om. Bart.* 390 βορεύοντος M *Schn.*  
 (5.172) : βορείου ὄντος *Coray* ὑπόλαμψις M *Schn.* (5.LVIII.172) : –ληψις *Ald.*  
 L λευκή M *Bart.* : *del. Schn.* (5.172) 391 νοτόθεν *Bart. Furl.* : νοτόθεν  
 νότοθεν M ἔαν πεφραγμένη M : ἔ. πεφραγμένη *Ald.* L : ἔ. πεφρασμένη *Furl.* :  
 ἔ. πεφασμένη *Schn.* : ἐναντία τεταγμένη *Schn.* (5.LVIII.172) : *opposita Bart.*  
 394 ἀποτελοῦσι τὸ σημεῖον *om.* V 396 τὸ *om. Ald.* LT 397 *post* σημαίνουσι  
*desinit* V 397sq. καίόμενος PC *Ald.* LT : καίμενος M 398 ἄκρου M : ἄκρον  
*Ald.* LT : ἄκρω *Schn.* (4.754)

looked to for signs) have clear peaks it signals fair weather. And when the clouds gird them down to the very sea, it is a sign of fair weather. And also when the clouds are coppery in color at sunset after a rain, it will be fair; for generally the next day will be fair.

When mist occurs there will be little or no rain. When cranes 52 fly without turning back, this signals fair weather; for they do not fly until they see a clear sky ahead of them as they fly. An owl calmly hooting during a storm signals fair weather; likewise if it sings calmly at night during a storm. And a sea-owl singing during a storm signals fair weather, but during fair weather it signals a storm. And a solitary raven croaking calmly, and if it croaks thrice and afterwards it croaks many times, it is a sign of fair weather.

And if right at dawn a crow cackles thrice it signals fair 53 weather; and likewise if in the evening during a storm it sings softly. And if a wren flies out of its nest, whether from an outside wall or from the house itself, it signals fair weather. And if during a storm blowing in from the north a white gleam appears in the north while a massive cloud has built up in the south, this generally signals a change to fair weather. And when a strong north wind stirs up many clouds and blows them away, it signals fair weather.

Cattle mating late (in the season) produce a sign of fair 54 weather. And an ox lying on his left flank signals fair weather; and a dog likewise (on their right side in winter). The birth of many cicadas signals that the season will be unhealthy. A lamp burning calmly in winter signals fair weather. And (likewise) if it (the lamp)



ἔχει λαμπρούς· καὶ ἐὰν ἐν κύκλῳ τὴν μύξαν περιγράψῃ λαμπρὰ γραμμή.

400

- 55 ὁ τῆς σχίνου καρπὸς σημαίνει τοὺς ἀρότους· ἔχει δὲ τρία μέρη καὶ ἔστιν ὁ πρῶτος τοῦ πρώτου ἀρότου σημεῖον, ὁ δεύτερος τοῦ δευτέρου, ὁ τρίτος τοῦ τρίτου· καὶ ὥς ἂν τούτων κλίνῃ κάλλιστα καὶ γένηται ἀδρότατος οὕτως ἔξει καὶ ὁ κατὰ τοῦτον ἄροτος.

405

- 56 λέγεται δὲ καὶ τοιάδε σημεῖα ὅλων τε τῶν ἐνιαυτῶν γίνεσθαι καὶ τῶν μορίων· ἐὰν ἀρχομένου τοῦ χειμῶνος ζόφος ᾗ καὶ καύματα γίνηται καὶ ταῦτα ἄνευ ὕδατος ὑπ' ἀνέμων διαλυθῇ, πρὸς τὸ ἔαρ σημαίνει χάλαζαν ἐσομένην. καὶ ἐὰν μετὰ τὴν ἐαρινὴν ἰσημερίαν ὀμίχλαι πίπτωσι, πνεύματα καὶ ἀνέμους σημαίνουσιν 410 εἰς ἑβδομον μῆνα ἀμφοτέρων ἀριθμουμένων. ὅσαι μὲν ἅμα μηννοειδεῖ τῇ σελήνῃ πίπτουσιν, αὗται μὲν πνεύματα σημαίνουσιν εἰς ἐκεῖνον τὸν χρόνον, ὅσαι δ' ἀμφικύρτου οὕσης τῆς σελήνης ὕδατα. καὶ ὅσῳ ἂν μᾶλλον ἐφ' ἐκατέρῳ τῷ σχήματι ὀμίχλαι πίπτωσι μᾶλλον τὰ εἰρημένα σημαίνει.

410

415

- 57 σημαίνει δὲ καὶ τὰ πνεύματα ἅμα ταῖς ὀμίχλαις ἐπιπιπτούσαις γινόμενα· καὶ ἐὰν μὲν ἅπ' ἡοῦς καὶ μεσημβρίας γίνηται τὰ πνεύματα, ὕδατα σημαίνει· ἐὰν δ' ἅπ' ἐσπέρας καὶ ἀπὸ τῆς ἄρκτου πνεύματα καὶ ψύχη. οὓς δὲ κομήτας Αἰγύπτιοι λέγουσιν οὐ μόνον τὰ προειρημένα σημαίνουσιν ὅταν φαίνωνται ἀλλὰ καὶ 420 ψύχῃ· τοῖς δὲ ἄστροις εἴωθεν ὥς ἐπὶ τὸ πολὺ σημαίνειν καὶ ταῖς ἰσημερίαις καὶ τροπαῖς, οὐκ ἐπ' αὐταῖς ἀλλ' ἢ πρὸ αὐτῶν ἢ ὕστερον μικρῶ.

420

399 λαμπρούς M : —άς Ald. LT περιγράψῃ M : περιγράφη Ald. LT 399sq. λαμπρὰ γραμμὴ Sch. (4.755) : λαμπρᾶ γραμμὴ M 408 ταῦτα ἄνευ ὕδατος Schn. (2.603, 5.LVIII.172) : τὰ ἄνευ ὕδατος Furl. : τὰ ἀνύδατος M : quae sunt aquae Bart. 420 σημαίνουσιν Schn. (5.LVIII.173) e significant Bart. : σημεῖα M 421 τοῖς δὲ ἄστροις εἴωθεν M : ἐπὶ δὲ τοῖς ἄστροις δυομένοις ἢ ἀνατέλλουσιν ἔωθεν Schn. (5.605, 5.LVIII) : ἐπὶ δὲ τοῖς ἄστροις εἴωθεν Wi.

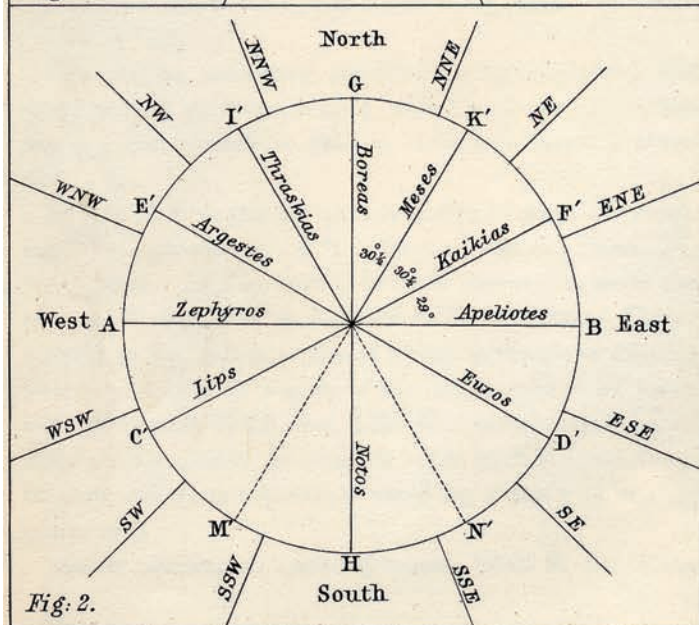
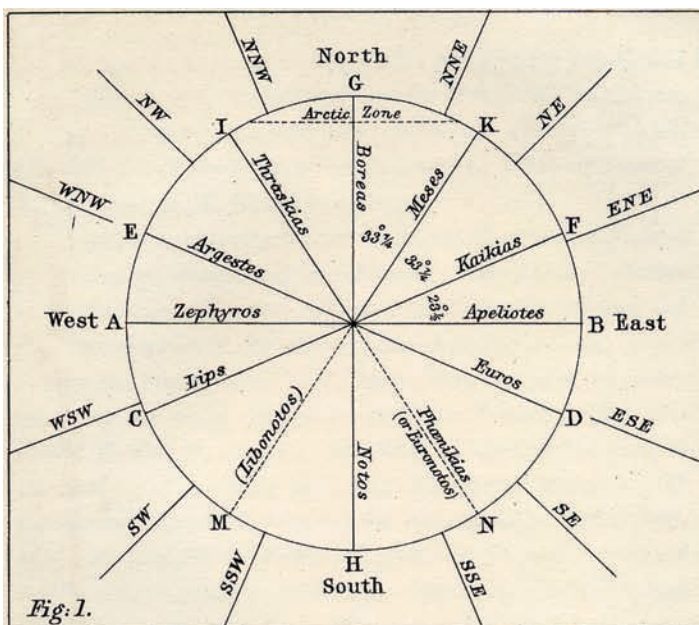
has on its surface what looks like shiny millet seeds; and if a bright line encircles the wick.

The fruiting of the mastic give signals for plowings: It has three 55 parts, the first ⟨fruiting⟩ being the sign of the first plowing, the second of the second, and the third of the third. And in whatever way ⟨each⟩ of these incline for the best and come to be ripest, so too will the corresponding plowing.

### *Miscellaneous Signs*

In addition, the following are said to be signs for whole seasons or 56 for ⟨smaller⟩ parts of the year. If at the start of winter it is overcast and it gets hot, and then these conditions are broken up by wind without rain, then this signals that there will be hail as spring begins. And if mists descend after the spring equinox, they signal breezes and winds for six months. The mists that descend when there is a crescent moon signal winds for that time; those that descend during a gibbous moon signal rain. And the more mists descend during either phase, the more they signal the results just mentioned.

Also significant are the winds that accompany the descending 57 mists: If, on the one hand, the winds arise from the east and south, they signal rain; but if they arise from the north, they signal winds and cold. What the Egyptians call comets signal not only the aforementioned when they appear but also cold. It is normal for the stars, equinoxes, and solstices to be generally significant, not only at their occurrences but also either shortly before or after.



## COMMENTARY

*Note: An em-dash in the lemmata indicates that all words omitted are commented on; three dots indicate that only the printed words are commented on. Authors referred to only by last name can be identified through the bibliography. See also the list of frequently used abbreviations at the beginning of the bibliography.*

### 1

**1.4 σημεία]** A σῆμα or σημείον is one thing, which need not be concrete or visible, that gives evidence of another, such as the stone grave marker on the shore that tells passing sailors (who in a preliterate age would in any case be too far away to see any pictures or signs) for years to come that someone killed by Hektor is buried here; *Il.* 7.87 ff. καὶ ποτὲ τις εἴπησι καὶ ὀψιγόνων ἀνθρώπων | νηὶ πολυκλήϊδι πλέων ἐπὶ οἴνοπα πόντον· | ἀνδρὸς μὲν τόδε σῆμα πάλαι κατατεθνηῶτος | ὅν ποτ' ἀριστεύοντα κατέκτανε φαίδιμος Ἴκτωρ; cf. *Soph. OC* 94 f., where Oedipus is warned to look for signs that he had reached his final resting place: ἢ σεισμὸν ἢ βροντὴν τιν' ἢ Διὸς σέλας. In *DS*, the root σημ- is used exclusively to indicate forthcoming meteorological phenomena— forthcoming either because they do not yet exist anywhere or because they have not yet arrived in the locale where the sign has been observed. It should be noted that Hesiod uses this root only once in *Works and Days*, and in a sense that is somewhat different from that found in all subsequent weather literature: (γεράνου φωνήν) ἢ τ' ἀρότοιό τε σῆμα φέρει καὶ χειμάτος ὥρην | δεικνύει ὁμβροῦ (WD 450 f.). In *DS* the crane and/or its cry is straightforwardly the sign (38.276-9, 52.379-81); here, in what may be regarded a periphrasis with essentially the same meaning, it *brings* the sign. Since Zeus is responsible for all astronomical phenomena, the general term for such signs is διοσημία, that is, Διὸς σημείον. The term is defined by Schol. *Aristoph. Ach.* 171 διοσημία δέ ἐστιν ὁ παρὰ καιρὸν χειμῶν; as one example from a large number, cf. *Il.* 13.242-4 ἀστεροπῇ ... ἦν τε Κρονίων ... δεικνὺς σῆμα βροτοῖσιν. Note also *Xen. Oec.* 17.2 (Isomachos:) ἐπειδὰν γὰρ ὁ μετοπωρινὸς χρόνος ἔλθῃ, πάντες που οἱ ἄνθρωποι πρὸς τὸν θεὸν ἀποβλέπουσιν, ὅποτε βρέξας τὴν γῆν ἀφήσῃ αὐτοὺς σπεῖρειν. See also *Arist. Pr.An.* 70a6, a definition of a logical sign: σημείον δὲ βούλεται εἶναι πρότασις

ἀποδεικτική ἢ ἀναγκαία ἢ ἔνδοξος, i.e., “If *X*, then *Y*,” which is exactly how it appears in *DS*; see C. A. Freeland, “Scientific explanation and empirical data in Aristotle’s *Meteorology*,” *OSAP* 8 (1990) 67–102; M. F. Burnyeat, “The origins of non-deductive reasoning,” in J. Barnes et al. (eds.), *Science and Speculation* (Cambridge 1982) 193–238.

Observation of such signs, whether they are called σήματα, τεκμήρια, or μαρτύρια, is an important part of empirical science; see G. E. R. Lloyd, *Magic, Reason and Experience* (Cambridge 1979) 126–225; see further R. J. Hankinson, *Cause and Explanation in Ancient Greek Thought* (Oxford 1998) 56 f. (in medicine); L. Taub, *Ancient Meteorology* (London 2003) 96–98.

**1.4 ὑδάτων καὶ πνευμάτων καὶ χειμώνων καὶ εὐδιῶν]** The four main divisions of *DS*, in the order in which they will appear. Cf. the first two lines of Vergil’s section on weather signs: *atque haec ut certis possemus discere signis, | aestusque pluviasque et agentis frigora ventos ...* (G. 1.351 f.); see the introduction, pp. 29–35. Aratos does not bother to provide a table of contents. (But Vergil’s *haec ... ipse pater statuit* [1.351–3] adapts Aratos’ references to Zeus at the beginning of his *Diosemia* section; cf., e.g., 772 [Zeus] πάντη δ’ ὃ γε σήματα φαίνων).

**1.4 ὑδάτων]** ὕδωρ = “rain” from Homer on; e.g. *Il.* 16.385 (LSJ s.v. I 2). The plural is often used of water in motion, whether flowing rivers or rain, or of discrete volumes of water, such as in Hippocrates’ *Airs Waters Places*. Either explanation can be applied here; cf. Pi. *O.* 11.2 f. ἔστιν δ’ οὐρανίων ὑδάτων [sc. χρήσις].

**1.4 πνευμάτων]** “Winds” of course, but note that Anaximenes can say ὅλον τὸν κόσμον πνεῦμα καὶ ἀήρ περιέχει (13 B 2), which can be hendiadys (“air in motion”), synonymy (so explicitly Ps.-Plut. *Plac.* 876ab), or a true disjunction; see G. Wöhrle, *Anaximenes aus Milet* (Stuttgart 1993) 63–66.

**1.4 χειμώνων]** In general either “winter (time),” as in c. 2; or (as more usually throughout this work) “storm(s),” both meanings as old as Homer. (Similarly, χειῖμα can be either winter or storm.) See further below, c. 38.

**1.4 εὐδιῶν]** “(Instances of) fair weather.” Usually found in the singular in both poetry and prose; cf. Pi. *I.* 7.38 εὐδίαν ἐκ χειμῶνος, Xen. *Hell.* 2.4.14 ἐν εὐδίᾳ χειμῶνα ποιοῦσιν. For the pl. cf. Plato *Leg.* 961e ἔν γε χειμῶσι καὶ εὐδίαις.

**1.5 ἐγράψαμεν]** When used in the active voice, followed by a direct object, the simplex γράφω means more “write down” or “write out” (rather than “write about” or “describe” [Hort]), which meaning fits rather well with the bare listing that follows. Does the plural indicate a group effort, as when *Aristotle* records contemporary observations, on which see G. E. R. Lloyd, *Aristotelian Observations* (Cambridge 1996) 162 f. Note [Arist.] *De Mundo* 292a7-9, printed below. On the other hand, Aristotle occasionally uses διεγράψαμεν of his own efforts: *EE* 1230b12, 1231b8, 1233a9; *Meta.* 1054a31; *Rhet.* 1378a27. Note also Ptol. *Phaseis* 2.66 καὶ τούτων ἀνέγραψα τὰς ἐπισημασίας καὶ κατέταξα κατὰ τε Αἰγυπτίους καὶ [ten names omitted] Δημόκριτον.

A first-person reference by an author now anonymous is frustrating, but presumably originally authorship was obvious, perhaps in a first sentence now lost. Cf. (the anonymous) *Dissoi Logoi* 1.2 ἐγὼ ... σκέψομαι. On the other hand, neither Aristotle nor Theophrastos ever seems to have identified themselves; for the latter’s introductory statements of purpose, cf. *Stones* 1 περὶ δὲ τούτων νῦν λέγωμεν, *Winds* 1 χρὴ λέγειν, *Meta.* 1 πῶς ἀφορίσαι δεῖ ... τὴν ὑπὲρ τῶν πρώτων θεωρίαν; *CP* 1.1 οἰκείως ἔχει διελεῖν, *HP* 1.1 τῶν φυτῶν τὰς διαφορὰς καὶ τὴν ἄλλην φύσιν ληπτέον. Since *DS*’s ἐγράψαμεν is so much in accord with these, it would be a mistake to use Steinmetz’s observation (*Physik* 14 f.) that Theophrastos does not use γράφειν of his own work to argue that *DS* is not by Theophrastos. J. G. Wood. *Theophrastus of Eresus on Winds and on Weather Signs* (London 1894) 11 actually believed that in the phrase that appears at the end of *De Ventorum Situ* (see the Appendix), ὑπογέγραφα δέ σοι, the “I” is Aristotle and the “you” is Theophrastos.

**1.5 καθ’ ὅσον ἦν ἐφικτόν]** Cf. [Arist.] *De Mundo* 391b3 καθόσον ἐφικτόν. Cronin “Authorship” 313 adduces similar expressions in Lysias and Plato. That is, the author declares that he has recorded (see above, on ἐγράψαμεν) all the signs he came across.

**1.5-6 ἃ μὲν ... λαβόντες]** For the use of the demonstratives ὅς μὲν ... ὅς δέ with participles, cf. Dem. Cor. 71 πόλεις Ἑλληνίδας ἃς μὲν

ἀναιρῶν, εἰς ἃς δὲ τοὺς φυγάδας κατάγων. Philemon fr. 116 K-A uses them with a finite verb. The practice is derided as a solecism by Lucian, *Pseudosophist* 1; see K-G 2.228.

**1.5 προσκοπήσαντες]** That is, the author is willing to stand behind some of the signs on the basis of his own correlation between signs and sequelae; others he has not observed himself but is willing to trust his sources. Are there others he has rejected because they do not stand up to observation or seem wrong *prima facie*? For the role of observation in Greek astronomy and Aristotle in particular, see G. E. R. Lloyd, *Magic, Reason, and Experience* (Cambridge 1979) 169-225.

**1.6 ἐτέρων]** That is, Matriketas, Kleostratos, Phaeinos, Meton, “and others”; see c. 4, with nn.

**1.6 οὐκ ἄδοκίμων]** Cf. Arist. *De Caelo* 292a7-9 ὁμοίως δὲ καὶ περὶ τοὺς ἄλλους ἀστέρας λέγουσιν οἱ πάλοι τετηρηκότες ἐκ πλείστων ἐτῶν Αἰγύπτιοι καὶ Βαβυλώνιοι, παρ’ ὧν πολλὰς πίστεις ἔχομεν περὶ ἐκάστου τῶν ἄστρον. On Egyptians, see below, 57.419.

**1.6-7 τὰ μὲν οὖν ἐπὶ τοῖς ἄστροις]** Not surprisingly, stars were long regarded as markers or signs (σημεῖα) of location, direction, or seasons; cf. Eur. *Ion* 1156 f. ὑάδες τε, ναυτίλοις | σαφέστατον σημεῖον, *Rhesos* 528 f. πρῶτα δύεται σημεῖα, Eur. Fr. 482 *TrGF*, Parm. 28 B 10.1 f. τὰ τ’ ἐν αἰθέρι πάντα | σήματα (and Tarán ad loc., p. 242), Genesis 1.14 “Let them [sc. stars] be for signs.” See further Webb *JHS* 41 (1921) 75; E. Pfeiffer, *Gestirne und Wetter in griechischen Volksglauben* (Leipzig 1914). As the watchman in the *Agamemnon* says (4 f.) ἄστρον κάτοιδα νυκτέρων ὁμήγυριν | καὶ τοὺς φέροντας χειῖμα καὶ θέρος βροτοῖς. In fact, though, *DS* makes little actual use of them for predicting the weather; see 23.155.

**1.7 δυομένοις]** See on 2.9 συνδύνη.

**1.7 τῶν ἀστρονομικῶν]** As Maass *GGA* [1893] 625 notes, this may also be rendered “from my astronomical works,” just as Aristotle can say ἐν τοῖς φυσικοῖς, “in my *Physics*,” but this reads badly in the context of the sentence. It could simply be neuter, ἀστρονομικά, “astronomical works” in general (so most scholars; e.g., Rehm *Paraepemastudien* 123,

Cronin “Authorship” 313). Hort renders “from astronomy,” as in Pl. *Prt.* 315c, but since Plato more often applies the adjective to men skilled in starlore we, following Wood, translate accordingly (*Tht.* 145a, *Rep.* 530a, *Tim.* 27a), which fits nicely with the roster of astronomers given below in c. 4. The sense is hardly affected, however the word is taken: Whether men or their writings, the reference is to people like Aristotle as well as *his* sources (see above, on οὐκ ἄδοκίμων).

More questionable is the need for a summary of astronomical risings and settings, as these form no part of the work as it now stands. As Wood 11 suggests, this may be taken as an indication that *DS* was once longer. Kaibel, “Aratea,” *Hermes* 29 (1894) 118, on the other hand, takes this, less likely, as a sign that *DS* was left unfinished. Rehm, loc. cit., dismisses it as a pastiche.

## 2

**2.8 δύσεις διτταί]** These are the perceptible rather than the actual settings: (i) As night falls, the star is seen in the west for a short time before it too sets. (ii) The star is one of the last to be seen to set on the western horizon before the light of the sun overwhelms the nighttime sky. The first is the heliacal setting: The next night its drop below the horizon will occur before sunset and hence be invisible. The second is the cosmical setting: the night before the sun will rise before the star’s dropping below the horizon can be seen. These settings and the risings to be given below are the well known *semeia* of the seasons. Kaibel, “Aratea,” *Hermes* 29 (1894) 118 n. compares Chrysippos fr. 683 *SVF* (Stob. 1.206.25 Wachs.) διχῶς γὰρ λέγεσθαι, δύσιν, τὴν μὲν κατὰ τὴν ἀνατολήν, τὴν δὲ κατὰ τὴν ἐπιτολήν. Cf. Pliny *NH* 18.218 *exortus occasusque binis modis intelleguntur*.

**2.8 τε γάρ]** Our author follows Aristotle, who, “in several passages, appears to use τε γάρ without following τε or καί for γάρ or καί γάρ” (Denniston 536).

**2.8 ἀφανισμοί]** A technical term of astronomy for the disappearance from view of heavenly bodies, whether by eclipse (occultation), by being overwhelmed by the greater light of the sun, or by setting below the horizon. Note in particular Eudoxos’ title Περὶ ἀφανισμῶν ἡλιακῶν (fr. 128 Lasserre = Philod. *De Dis.* 1 col. 21.28-30). As Lasserre, *Die Frag-*



*mente des Eudoxos von Knidos* (Berlin 1966) says ad loc., when applied to stars, the word refers not so much to the *process* of disappearance from view caused by the sun as to the *state* of being invisible; thus, even shortly before the reappearance of a star (φαῦσις) one can speak of its ἀφανισμός.

**2.9 συνδύνη]** This is the form found in Autolykos, *Risings and Settings*. Elsewhere in this work the simplex δύνω is found (as well as δύομαι). V's reading may yet be the right one.

**2.10 ἀνατέλλοντι δύνῃ]** We keep the reading of the mss. It is common for compounds to be followed by their simplexes with the same meaning, so that here δύνῃ = συνδύνῃ; see R. Renehan, *Studies in Greek Texts* (Göttingen 1976) 11-27. Strictly interpreted, this refers to the true cosmical setting, i.e. when the star can be determined to set at the moment of sunrise. But since no stars are visible once the sun is visible, ordinary people looking at the heavens for signs are more likely to be satisfied with the perceptible or apparent cosmical setting; i.e., the star is seen to set for the first time (this season) just before the sun rises. As the equivalent sentence below on one sort of rising makes clearer (προανατέλλῃ), what the author means here is that the star is seen to set (in the west) very soon *before* the sun rises (in the east). We can make this explicit by reading either ἀνατελοῦντος or προδύνῃ. The first conjecture is unconvincing (and not only because futures of ἀνατέλλω are found only in late authors); for the second cf. Arist. *Mete.* 343b20 (a comet in the western sky) οὐκ ὤφθη ὥς προδεδυκῶς τοῦ ἡλίου. Rather than change the text, however, we attribute the carelessness to the author and not to a scribe. He could, for example, have omitted a previous sentence with προανατέλλ-; see the comment above on *simplex pro composito*.

For explanations of the various permutations of rising/setting, real/apparent, and heliacal/acronychal, see Autolykos, *Risings and Settings* 1, prol.; G. R. Mair's intro. to the Loeb Aratus, pp. 202 f.; West, *Hes. WD* 379 f.

**2.10 ἀνατολαὶ διτταί]** These, unlike the complementary pair of settings, are given the labels "morning" (= heliacal) and "acronychal" (= cosmical), respectively. (i) The star rises only to disappear at the rising of the sun. (ii) As the sun sets in the west, the star is just above the horizon in the east, and will rise as the night progresses.

Our author, like Aristotle and Th., uses ἀνατολή for the rising of stars (note 1.2 ἐπιτολή); others reserve the word for the sun, using ἐπιτολή for stars; see Böhme 59 f., Cronin “Authorship” 315 ff.

**2.10 ἔϕοι]** Here, unusually, a two-termination adjective, as in Eur. *Ph.* 169, D.H. 1.12.2; generally, and everywhere else in *DS*, an adjective of three terminations. Cronin “Authorship” 316 wonders “whether the carelessness, to which this inconsistency is due, was that of the author or of a scribe.” One should also consider whether differences such as this, as well as some others to be noted below in the course of the commentary, may be due to cut-and-paste method employed by the author/compiler. In contexts such as this, “heliacal” is a usual translation (unnoticed by LSJ). See W. Kastner, *Die griechischen Adjektive zweier Endungen auf –ΟΣ* (Heidelberg 1967) 73 f.

**2.11 ἀκρόνυχος]** Since ἄκρα are extremities, ἀκρόνυχος came to mean “at nightfall” (but not “at night’s end,” for which Aratos manufactures 308 ἀκρόθι νυκτός and 740 ἄκρα ... νυκτῶν). Cf. Arat. 775 ἄκρη νυκτί, Pi. *P.* 11.10 ἄκρα σὺν ἐσπέρα, Hes. *WD* 567 ἀκροκνέφαιος (“just at dusk,” West). Cronin “Authorship” 316 points out that this seems to be a fourth-century word, often associated with Eudoxos and Dositheos, although Aristotle uses it only once (*Mete.* 367b26) and Theophrastos never.

**2.12-13 Ἄρκτούρου ... ἀνατολαί]** Since its great brightness made it an easy star to observe (cf. *Od.* 5.272), both its winter (ca. Feb. 17) and fall (ca. Sept. 8) risings became standard time markers. For the former, cf. Hes. *WD* 565-567 (60 days after the fall equinox) δὴ ῥα τότε ἄσστηρ | Ἄρκτοῦρος προλιπὼν ἱερὸν ῥόον Ὠκεανοῖο | πρῶτον παμφαίνων ἐπιτέλλεται ἀκροκνέφαιος, Thuc. 2.78.2 περὶ Ἄρκτούρου ἐπιτολάς. For the latter, cf. Hes. *WD* 609 f. εὖτ' ἂν δ' Ὠρίων καὶ Σεῖριος εἰς μέσον ἔλθῃ | οὐρανόν, Ἄρκτοῦρον δ' ἐσίδῃ ῥοδοδάκτυλος Ἥως. See further McCartney *CW* 20 (1926) 49 f., Kidd on Aratos 91-95.

**2.12 λεγόμεναι]** Not “so-called,” but as in the phrases τὸ λεγόμενον, λέγεται, what is said often and hence familiar; i.e., = ὀνομαζόμεναι (Rehm *Paraepigmastudien* 7), for which see below.

**2.13 ἀμφοτέρως]** That is, not all stars have both heliacal and cosmical risings.

**2.15 ὀνομαζομένων]** “Well-known” (Cronin), “familiar” (Hort), “which have received names” (Wood). That is, following Wood, *DS* refers only to the stars and constellations which have been given names. See above, on λεγόμεναι.

**2.15 Πλειάδος]** This small star cluster with its collective name is here treated like a single star. Its rising in the spring (ca. May 11) and setting in the fall (late October) were commonly used to mark the beginning and end of good sailing weather (whence the false etymology from πλεῖν) and sowing and planting; see West on Hes. *WD* 383-4. As Cronin “Authorship” 320 notes, both Aristotle and Th. prefer the collective name to the plural Πλειάδες; probably first used thus in the fifth century (Hipp. *Epid.* 1.1). The literature, both ancient and modern, on the Pleiades as season markers is huge; see McCartney *CW* 20 (1926) 47 f.

**2.15 Ὠρίωνος καὶ Κυνός]** In June and July, respectively. Arktouros, the Pleiades, Orion, and Seirios were used as regular “weather-cum-season” signs (Cronin “Authorship” 316; cf., e.g., Hes. *WD* 609 f., quoted above), whereas *DS* proceeds to list *irregular* signs of short terms of possibly abnormal fair and foul weather which, although coming more in one season than another, lack the gross regularity of the seasons. Böker 1629 f. thinks that since Seirios (Sirius) appears far less in Greek weather literature than in Babylonian, a section devoted to this star must have been lost in what he calls *die Grundschrift* behind *DS* and all other Greek weather literature.

### 3

**3.16 λοιπῶν σημείων]** Sc., other than astronomical signs, which are independent of location (within Greece); that is, the weather signs that constitute the rest of this work.

**3.17 ὄρη ὑψηλὰ καὶ αὐλῶνες]** Mountains, visible from afar and natural loci for meteorological discontinuities, figure frequently in the literature (as will be documented immediately below and elsewhere); in *DS* alone the following mountains are named: Hymettos, Parnes, Brilet-

tos, Athos, Pelion, Olympos (see the index), as well as the mountainous sites of Aigina and Euboia. Valleys are mentioned less, but cf. Pliny *NH* 18.357 *nebulae montibus descendentes aut caelo cadentes vel in vallibus sidentes serenitatem promittent*. Arat. 988-990 and Verg. *G.* 1.401 mention the clouds falling to the base of a mountain as a sign of clear weather but neither specifies valleys (and the latter says *campoque recumbent*). See further W. Capelle, *Berges- und Wolkenhöhen bei griechischen Physikern* (Leipzig 1916) 13 f.; Böker 1645 f.

**3.17 μάλιστα δέ]** μᾶλλον δέ would make a more appropriate contrast with ἔνια μὲν. As the text stands the mountains mentioned are a special case of ὄρη ὑψηλά. At 5.32 the δέ marks off μάλιστα κυριώτατα. See McCartney *CW* 20 (1926) 51 f.

**3.18 θάλασσαν]** Signs such as described here would be especially useful to sailors looking toward the coast, but they could also be observed by our mountain-going astronomers, and could be useful to island dwellers as well.

**3.18 καθήκει]** Hdt. 7.22.2, ὄρος μέγα ... ἐς θάλασσαν κατήκον (of Mt. Athos).

**3.19 τὰ νέφη προσπίπτει πρὸς τοὺς τοιοῦτους τόπους]** See M. P. Nilsson, *History of Greek Religion* (Oxford 1925) 113, “Every traveller in Greece will have noticed how the clouds swiftly gather round the highest mountain-top in the neighborhood. In a short time the sky is covered with clouds, the roar of the thunder is heard, and the rain pours down.” See below, cc. 34, 45, 51. Note also one of the rare similes in Homer to contain a weather portent, which also, like *DS*, recognizes the importance of “where one is situated,” *Il.* 4.275-278:

ὥς δ' ὅτ' ἀπὸ σκοπιῆς εἶδεν νέφος αἰπόλος ἀνὴρ  
ἐρχόμενον κατὰ πόντον ὑπὸ Ζεφύροιο ἰωῆς·  
τῷ δέ τ' ἄνευθεν ἐόντι μελάντερον ἤύτε πῖσσα  
φαίνεται' ἰὸν κατὰ πόντον, ἄγει δέ τε λαίλαπα πολλήν.

**3.19-20 μεθισταμένων εἰς τοῦναντίον]** Cf. Th. *Winds* 24, 26, where it is explained that winds blowing from over water give way to reverse land winds, which occurs mostly in hollows (ἐν μὲν γὰρ τοῖς κοίλοις ὁ ἀήρ συναθροίζεται προσπίπτων). The air becomes concentrated and hence heavier in the hollows.

**3.20 ἀντιμεθίστανται]** There are too many examples, and not only in unpolished prose, of neuter plural nouns taking plural verbs to favor a change to the singular; see K-G 1.64-66.

**3.20 ὑγρότερα γινόμενα]** *DS* is in agreement with Th.: οὐ μικρὰ δ' ἐνταῦθα ἀλλὰ μεγίστη ῥοπή τὸ τὰς χώρας ὕψος ἔχειν· ὅπου γὰρ ἂν προσκόψη τὰ νέφη καὶ λάβῃ στάσιν, ἐνταῦθα καὶ ὕδατος γένεσις, “It is highly important if the district has elevations. For whenever the clouds into an obstacle [and so suffer compression; cf. Th. *Winds* 3] and stop, rain is generated” (*Winds* 5). γινόμενα would be more exact but is not a necessary conjecture. Cf. [Arist.] *Probl.* 26.7 (940b35-38) πρὸς ἀνάντη μόλις ῥεόντων [sc. ἀνέμων], ἐνταῦθα ὑφίσταται μᾶλλον τὰ νέφη, οὗ ἀδυνατεῖ ἔτι προωθεῖν αὐτὰ ἄνεμος. ὑφιστάμενα δὲ καὶ πιεζόμενα ῥήγνυται. That Theophrastos, in opposition to Aristotle’s view that rain is caused by cooling alone, explicitly said that rain is caused by the compression of clouds against mountains is recorded by Proklos *In Plat. Tim.* 22e καὶ γὰρ τοῦτο ἐν εἶναι αἴτιον ὄμβρων φησὶν ὁ Θεόφραστος τὴν τῶν νεφῶν πίλησιν πρὸς τινα τῶν ὄρων, Olympiodoros *In Arist. Mete.* 80.30-81.1 Stüve ἰστέον δέ, ὅτι ὁ μὲν Ἀριστοτέλης αἴτιον λέγει τῆς εἰς ὕδωρ μεταβολῆς τὴν ψύξιν μόνον· Θεόφραστος δὲ οὐ μόνον τὴν ψύξιν αἰτίαν φησὶ τῆς τοῦ ὕδατος γενέσεως, ἀλλὰ καὶ τὴν πίλησιν, and Galen *In Hippocr. Aer. Aqu. Loc.* 8.6 (Th. fr. 211a-c). See further R. W. Sharples, “Some aspects of the secondary tradition of Theophrastus’ *Opuscula*,” in W. W. Fortenbaugh and R. W. Sharples (eds.), *Theophrastean Studies: On Natural Science* etc. (New Brunswick 1988) 44, who also adduces a similar statement in the Syriac translation of Th.’s *Meteorology*; and Sharples’ comm. ad loc. (3.1, pp. 194-198). See further P. Steinmetz, *Die Physik des Theophrast* (Bad Homburg 1964) 217-221.

**3.21 διὰ βάρος]** The weight is caused by the compression. In describing Theophrastos’ similar theory, Proklos and Olympiodoros use συνωθουμένων and πίλησιν (fr. 211 a-b); Theophrastos himself in *Winds* specifies only the diffusion and rarefaction of the winds, but when he says that they become colder passing through a narrow passage (διὰ στενοῦ, c. 3), his argument is all but complete; note the square brackets added to the translation of *Winds* 5, above.

**3.22 ἔστι ... λαβεῖν ... γνώμονα]** *DS* frankly acknowledges its dependence on others for meteorological observations. Cf. Arist. *De Caelo*

291a29-32 περὶ δὲ τῆς τάξεως αὐτῶν, ὃν μὲν τρόπον ἕκαστον κεῖται τῷ τὰ μὲν εἶναι πρότερα τὰ δ' ὕστερα, καὶ πῶς ἔχει πρὸς ἄλληλα τοῖς ἀποστήμασιν, ἐκ τῶν περὶ ἀστρολογίαν θεωρεῖσθω. Later works of empirical science have the luxury of getting their facts from other texts. Pioneer investigators have to depend on observations made either by themselves or others. Yet just as later writers often fail to mention the works they read, fifth- and fourth-century authors often write as if all their facts derive from personal observations. *DS*'s frank, and early (unlike Aristotle's, quoted above), acknowledgement of dependence on the observation of others, who are even named (again, unlike Aristotle, who several times in *De Caelo* and *Meta.* refers vaguely to οἱ μαθηματικοί), deserves more notice, and praise, than it has received. When Theophrastos in his work on odors remarks on the practices of οἱ τὰ ἀρώματα καὶ τὰ διαπάσματα συντιθέντες, οἱ τὰ μύρα κεραννύντες, and οἱ μυρεψοί (*Odors* 8), he comes very close to telling us that he consulted with these experts, just as it can be deduced that Aristotle in *HA* "and his helpers consulted hunters, fishermen, horse-rearers, pig-breeders, bee-keepers, eel-breeders, doctors, veterinary surgeons, midwives and many others with specialized knowledge of animals" (Lloyd, *Magic Reason Experience*, 211; cf. 211 f. for an assessment of Aristotle's ability to judge his sources). Elsewhere, Theophrastos, although not attempting to disguise the fact that he has consulted with others, is even more oblique in indicating his debt to others. In *Stones*, e.g., he uses phrases like 20 λαμβάνουσι δὲ τὴν πίστιν διὰ ... , 21 σημεῖον δὲ λαμβάνουσιν ὅτι ... . See Steinmetz *Physik des Theophrast* 100 f. Nobody, though, is as explicit as Thucydides in laying out his method (1.22): of some things he himself was witness, for others he depended on eye-witnesses whose memories may be faulty, and who furthermore for historical/political events may not be disinterested informants, so that no source can be taken at face value. As many have noted, this statement of method is designed to mark a distinct advance over Herodotos (e.g., 2.123.1, 7.152.3).

**3.22 ἰδρυμένος ἦ]** The perfect conveys the sense of encamping, i.e., in this context, taking up a position for long-term observation; cf. Eur. *Hipp.* 639 κατ' οἶκον ἰδρυται γυνή. Periphrastic perfects of moods other than indicative are more common than "monolectic" forms; see W. J. Aerts, *Periphrastica* (Amsterdam 1965) 39, although it remains barely possible that *DS* uses a periphrastic form to "denote a state rather than action" (Smyth § 599).

**3.22 τοιοῦτον]** I.e., one who has paid attention to location, as well as to the relevant meteorological and astronomical signs.

**3.22 γνώμονα]** A close parallel in Aisch. *Ag.* 1130 θεσφάτων γ. The word is nicely defined by Fraenkel ad loc. as “The man who, from experience, insight, and special knowledge, is capable of deciding and judging.” Wood, less likely, takes γνώμονα here to mean “indication,” with which compare Theogn. 543-6 χρή με παρὰ στάθμην καὶ γνώμονα τήνδε δικάσαι ... ὄφρα μὴ ἀμπλακίης αἰσχρὸν ὄνειδος ἔχω.

**3.23 σαφέστατα]** A local person knows best; as a saying recorded by Polybios 9.25.3 has it, ἐγγώριοι ... τὰς τῶν ἀνέμων στάσεις ... κάλλιστα γινώσκουσιν.

#### 4

**4.24 γεγένηται]** Wood’s “have become” is better than Hort’s “have been found.” The verb could also suggest that each person named below is a native of the place; but see below, on Phaeinos.

**4.25 Ματρικέτας]** Since Methymna is on the north coast of Lesbos, the obscure Matriketas may have been known personally to the author of *DS*; see Cronin “Authorship” 322. No other literary source mentions him. Lepetymnos, 838 m, is one of five notable mountains on Lesbos (Pliny *NH* 5.140; and in general on wind and weather on Lesbos, Büchner, “Lesbos,” *RE* 12 [1925] 2115-17). Note that while Meton is identified below as an Athenian, *DS* gives only the place of observation for Matriketas (in Methymna), Kleostratos (in Tenedos), and Phaeinos (in Athens), from which we should not infer that the first two were not in fact citizens of these places, as we are specifically told of Phaeinos (but perhaps not by the author; see below), since Kleostratos is specifically identified as Tenedean by six secondary sources.

**4.25 ἀπό]** *Observing* from, not *taking his signs* from, as the following τὰ περὶ τὰς τροπὰς shows. Sokrates in the *Clouds* also recognized that height was beneficial for observing the heavens (though his reasons are not the obvious ones; 227-232). For a study of the way weather signs appear in the *Clouds*, see A. M. Bowie, *Aristophanes: Myth, Ritual and Comedy* (Cambridge 1993) 124-7.

**4.26 Κλεόστρατος]** Author of an hexameter *Astrologia* (or *Phainomena*), two lines of which are extant (fr. 1 Bernabé = DK 6 B 1):

ἀλλ' ὁπότεν τρίτον ἡμαρ ἐπ' ὀγδώκοντα μένησι  
 ⟨.?.⟩ [Diels supplies a line *exempli gratia*; Bernabé does not]  
 σκορπίος, εἰς ἄλλα πίπτει ἄμ' ἡοῖ φαινομένηφι.

Kleostratos, called ἀρχαῖος by the scholion ad Eur. *Rh.* 528 which quotes these lines, is usually dated to the late sixth century BC (so Diels, Fotheringham, Webb, Samuel) on the basis of the “discoveries” attributed to him, but Aratos too is often credited with the facts of his poem, which we know to be derived from Eudoxos; see Sider on Philodemos *Epigram* 31.1 (*AP* 11.318). We would not rule out a Hellenistic date, which, if early enough, could still be contemporary with Theophrastos. Height of Mt. Ida: 1770 m. See W. Kroll, “Kleostratos (7),” *RE* Supplb. 4.912; J. K. Fotheringham, “Cleostratus,” *JHS* 39 (1919) 164-184 (who prints the most complete collection of testimonia); E. J. Webb, “Cleostratus redivivus,” *ibid.* 41 (1921) 70-85; Fotheringham, “Cleostratus (III),” *ibid.* 45 (1925) 78-83; D. R. Dicks, “Solstices, Equinoxes, and the Presocratics,” *ibid.* 86 (1966) 26 f. (Dicks argues that Fotheringham, Webb, and W. Burkert, *Lore and Science in Anc. Pythagoreanism* [Cambridge, Mass. 1972] 314 f., are too uncritical of the ancient evidence); A. E. Samuel, *Greek and Roman Chronology* (Munich 1972) 39 f.

**4.26 Φαινός]** *RE* (1). Metics were originally drawn to Athens to pursue a trade, but their status was inherited by their children, who were not restrained from other activities. As teacher of Meton, he would have to have been active in the mid fifth century. See below, on Meton, who was said to have derived his 19-year cycle from Phaeinos.

**4.27 Λυκαβηττοῦ]** The Athenian hill somewhat to the east of the Acropolis, 277 m high. Other Attic mountains are higher (see below on 20.131 f. Hymettos and 43.316 Parnes; Mt. Pentelikon is 1105 m), but Lykabettos is more convenient for someone living in Athens. C. Theander, “ΛΥΚΑΒΑΣ, ΛΥΚΑΜΒΗΣ,” in *Symbolae Philologicae O. A. Danielsson* (Uppsala 1932) 349-351, although he acknowledges the name’s preGreek origin, argues that it means something like “annual service to a/the god”; this is unlikely. For the insertion of “parasitic” nasals before consonants, typically stops, see W. Schulze, *Orthographica* c. 1 (in his *Orthographica et Graeca Latina*, ed. E. Fraenkel, Rome 1958); L. Threatte, *The Grammar of Attic Inscriptions. I. Phonology* (Berlin 1980) 488-491. Note too the form Μέντων just below.



**4.27 τὰ περὶ τὰς τροπὰς]** “The things concerned with solstices”; including, e.g., the correlation between solstice and forthcoming weather patterns. According to Schol. in Aristoph. *Aves* 997 = Philochoros 328 F 222 FGrHist, Meton set up an instrument for determining solstices on the Pnyx (in 433/432 BC), traces of which have been found; see W. Judeich, *Topographie von Athen* (Munich 1905) 351 f.; K. Kourouniotis and H. A. Thompson, “The Pnyx in Athens,” *Hesperia* 1 (1932) 207-211. Paul Tannery, *Recherches sur l’histoire de l’astronomie ancienne* (Paris 1893) 18, noting that Lykabettos lacks the height of the other mountains named, reasonably suggests that the use of the phrase τὰ περὶ τὰς τροπὰς means that Phaeinos used Lykabettos as a “gnomon gigantesque,” noting where its shadow fell throughout the year. He weakens his case for the originality of Phaeinos by linking the name Lykabettos (whose ending suggests a pre-Greek origin) with the obscure word λυκάβας, so that “on pourrait soupçonner que la situation topographique de cette hauteur l’avait depuis longtemps désignée pour le même usage, avant même toute pratique du gnomon” (ibid. n. 1); see Theander, *Symbol. Danielsson* 349.

**4.27-8 παρ’ ... ἀκούσας]** ἀκούω is very occasionally found with a preposition + gen. (LSJ s.v. I 1 c); for this particular combination, cf. Soph. *OT* 6 f., 95. More noteworthy here is that the verb is used absolutely in the sense “be a student (of),” which elsewhere is late (it is Diogenes Laertius’ favorite verb for this). Since παρακούειν (Aristotle’s use of which is missed by Bonitz: *EN* 1149a26) has quite a different sense, the preposition παρά contributes nothing to the meaning.

**4.27-8 Μέτων]** The most famous of those named here (to the extent that he could appear as a character in Aristophanes’ *Birds* of 414 BC), he is credited with several important observations about the relationship between astronomical signs and the cycle of the year, in particular the nineteen-year cycle mentioned here. See G. J. Toomer, “Meton,” *Dict. of Scientific Biography* 9.337-340, who considers it possible that “Phaeinos was an Asian Greek who acted as transmitter of Babylonian astronomical knowledge” (339). See also Böker 1618 f. and, for a recent detailed survey of his accomplishments, A. C. Bowen and B. R. Goldstein, “Meton of Athens and astronomy in the late fifth century B.C.,” in E. Leichty et al. (eds.), *A Scientific Humanist: Studies in Memory of Abraham Sachs* (Philadelphia 1988) 39-81.

Since Meton's cycle was developed in 432 BC, this provides a terminus post quem for the prologue if not the entire work.

**4.28 ἐνιαυτόν]** Schneider justifies this reading by comparing App. Vat. Proverb. 3.88 Μέτων Ἀθηναῖος ἀστρολόγος ὁ τὴν ἐννεακαιδεκα-ετηρίδα συνταξάμενος καὶ ὀνομάσας ἐνιαυτόν. τοὺς οὖν μακρὰς ὑπερθέσεις ποιουμένους ἐπισκώπτοντες ἔλεγον, Ἀναβάλλεσθαι εἰς τὸν Μέτωνος ἐνιαυτόν. Cf. Ael. *VH* 10.7 τὸν μέγαν ἐνιαυτόν, ὡς ἔλεγεν, εὔρε καὶ ἔφατο αὐτὸν ἐνὸς δέοντα εἴκοσιν ἐτῶν, Athen. 7.278b, Pliny *NH* 2.13, 5.140. Hence, Hort's supplement is unnecessary.

**4.28-9 ἦν δὲ ὁ μὲν Φαεινός ... Ἀθηναῖος]** This reads very much like an intrusive gloss, an inference derived from the distinction to be drawn between Ἀθήνησιν and Ἀθηναῖος.

**4.29-30 καὶ ... δέ]** A combination at home in Plato and Aristotle; Denniston 199-201. καὶ simply adds, δέ emphasizes ἄλλοι.

**4.30 ἡστρολόγησαν]** This may be the first appearance of this verb. Cf. Sosipater 1.15 K-A, of a very thorough teacher of cookery (one who took the lesson of the *Republic* to heart), ἐδίδασκεν ἡμᾶς πρῶτον ἀστρολογεῖν; found next in Polyb. 9.20.5. The verb used earlier is ἀστρονομέω (Aristoph., Plato; cf. ἀστρονόμος, found in Xenophon and at the beginning of this chapter). Is the aorist used here inceptive ("came to study astronomy"), or does it rather suggest that the writer lived so long after the men he mentions that their activity can be summarized with an concentrative aorist rather than an imperfect?

## 5

**5.31-2 ἄλλα ... παθημάτων]** The mss. offer a confusing choice of alternates. In addition to inarticulate τε and καίς, note that M reads τῶν ... τινῶν ("verba subobscura," Bonaventura), which suggests that V's deviation is due, at least in part, rather to editorial emendation than to scribal error. Our text hopes to make sense in terms of the divisions found in what follows in *DS*: i.e., in addition to astronomical weather signs (which here would seem, at least at first glance, to include *all* heavenly phenomena, including meteorological) there are also signs derived from animals, which may be further divided into domestic and

“others,” as there seems to be a dichotomy between κατ' οἰκίαν and ἑτέρων. Thus, (i) after ζώων we retain the καί of M, (ii) we read Schneider's καί before ἑτέρων, and thus (iii) produce what seems to be a necessary contrast between domestic animals and others (such as crows, ravens, herons, cranes, and wolves), and (iv) on the assumption that the one τε given by the mss. is correct (should it, though, be changed to τῶν?) we supply its complement by reading τῶν τε for the mss.' τινῶν (which is in itself unobjectionable), the two τες now separating animals from their behavior, which in turn calls for reading Schneider's τρόπων (see next lemma); see Rehm *Parapegmastudien* 124 n. 3, who defends Schneider against F. Dirlmaier, *Gnomon* 14 (1938) 131; see also Cronin “Authorship” 322 f.

**5.31 ζώων]** Cf. Pliny *NH* 8.102 *milia praeterea, utpote cum plurimis animalibus eadem natura rerum caeli quoque observationem et ventorum, imbrum, tempestatum praesagia alia alio modo dederit, quod persequi immensum est*, a task which Pliny nonetheless decides to pursue in Book 18; Cic. *Div.* 1.15 *inest in ranunculis vis et natura quaedam significans aliquid per se, ipsa satis certa, cognitioni autem hominum obscurior*.

**5.32 τῶν τε τρόπων καὶ παθημάτων]** Schneider (approb. Böhme) altered τόπων to τρόπων. It is true that “places” (*in primis* mountains) can provide signs, but παθημάτων would now be left hanging, with no discernable sense, whereas “habits and affections,” referring back to animals is precisely what we find throughout *DS* (our translation “reactions” for the latter word seems to catch its meaning). τῶν, as usual, is possessive: from animals and *their* ways.

**5.32 μάλιστα]** For μάλιστα with superlative, see LSJ s.v. μάλα III 3. κυριώτατα can be taken as adverb (with λαμβάνεται), which makes <τά> unnecessary. What are in fact “The best signs”? Most scientists would say those that are themselves examples of weather: clouds, winds, and atmospheric conditions in general, which include rainbows and solar and lunar halos. They have little faith in signs derived from animal behavior; see the Introduction, p. 8.

**5.33-4 σελήνη νυκτός οἶον ἥλιος]** Since the moon can be seen during daylight, νυκτός is necessary, and ἡμέρας goes without saying. For the thought, cf. Arist. *GA* 777b25 f. (ἡ σελήνη) γίγνεται γὰρ ὥσπερ

ἄλλος ἥλιος ἐλάττων. Different is Th. *Winds* 17 (ἡ σελήνη) οἶον γὰρ ἄσθενής ἥλιός ἐστιν, where the thought is that the moon's influence on winds is less than that of the sun.

**5.34 σύνοδοι]** “Conjunctions,” normally in astronomy (as elsewhere) of two distinct items. Here it is of two “moons” i.e., “months.”

**5.34 χειμέριοι]** Similarly, Arist. *GA* 738a20-22 αἱ δὲ τῶν μηνῶν σύνοδοι ψυχραὶ διὰ τὴν τῆς σελήνης ἀπόλειψιν, διόπερ καὶ χειμερινούς συμβαίνει τὰς συνόδους εἶναι τῶν μηνῶν μᾶλλον ἢ τὰς μεσότητας.

**5.36-7 ἀπόλειψις ... ἔκλειψις]** Our translation of both words as “loss” treats them as synonyms (Hort renders both as “failure”), but, as Böhme 63 f., conjectured, the sentence would read much better were they transposed and read with ἀπόλειψις = “waning,” “absense,” and ἔκλειψις = “eclipse.” Then the waning (actually the time of least light) of the moon is compared to an eclipse of the sun. Note Wood's translation, “The obscuration of the moon also occurs in a similar way to an eclipse of the sun,” which implicitly makes the transposition suggested but which, ignoring the force of the οὖν, regards this sentence as making a new point (“also,” which is not in the Greek) rather than continuing with the preceding.

## 6

**6.40 διχοτομίαι διορίζουσι τὰς ὥρας]** We take the meaning to be that, although time is a continuum, various bipartitions are used to separate it into meaningful sections. Arist. uses διχοτομία of the moon's quarters (*GA* 777b22; cf. *De Mundo* 291b21, 292a4), but the moon of course does not determine the day or the year. Cf. Pliny *NH* 18.280 *semenstri spatio intra se* (sc. *Pleiades*) *messes vindemiasque et omnium maturitatem complexis*. The two units resulting from a dichotomy need not be of equal amount; see Sider *RSC* 24 (1976) 345 n. 37. V's διχοτομαί was not a Greek word.

**6.42 Πλειάς]** See above, on 2.15.

## 7

**7.45 τροπαὶ καὶ ἰσημερίαι]** Cf. Hipp. *Aer.* 11 μέγισταί δέ εἰσιν αἶδε αἱ τέσσαρες καὶ ἐπικινδυνόταται· ἡλίου τροπαὶ ἀμφοτέραι καὶ μᾶλλον αἱ θεριναὶ καὶ αἱ ἰσημερίαι νομιζόμεναι εἶναι ἀμφοτέραι, μᾶλλον δὲ αἱ μετοπωριναί· δεῖ δὲ καὶ τῶν ἄστρον τὰς ἐπιτολὰς φυλάσσεσθαι καὶ μάλιστα τοῦ Κυνός, ἔπειτα Ἀρκτοῦρου, καὶ ἔτι Πληϊάδων δύσιν. Similarly, [Arist.] *Probl.* 26.26 (942b25-943a4) discusses the equinoxes as seasonal and weather signs. Pliny *NH* 18.220 says of the equinoxes and solstices *cardines temporum quadripertita anni distinctione constant*.

**7.46 κατάστασις]** Regularly applied to atmospheric conditions by poets as well as medical (e.g., *Aer.* 11, in the sentence just after the one quoted above) and scientific writers. Th. *HP* 8.8.7 in fact has the same phrase, ἄερος κατάστασις.

**7.46-7 ὥς ἐπὶ τὸ πολὺ]** A common phrase in *DS*, an admission that weather signs express only the likelihood that a particular event will follow. ὥς ἐπὶ (τὸ) πολὺ at 7.46 f., 8.53 f., 9.57 f., 10.67, 13.89, 23.157 f., 33.235, 53.391, 57.421. Similarly, ὥς τὰ πολλὰ at 11.70 f., 24.163, 165, 166, 167 f., 25.170, 30.206 f., 34.245, 246, 44.325, 48.354 f., 356, 51.377. See van Raalte on Th. *Met.* 7b10 εἰκότως, a root, by the way, found in *DS* only in the phrase παρὰ τὸ εἶδος.

**7.48 διέχει]** Schneider's διέχει, which rids the text of a δεῖ that claims more than this cautious work does elsewhere, is surely right. He compares (2.601) *Probl.* 1.26 (862b7-9) διὰ τί μετὰ τὰς τροπὰς ἀμφοτέρως μέχρι ἑκατὸν ἡμερῶν ἀποθνήσκουσι μάλιστα; ἢ ὅτι ἄχρι τοσούτου ἑκατέρω ἢ ὑπερβολὴ διέχει, ἢ τε τοῦ θερμοῦ καὶ τοῦ ψυχροῦ; (an important parallel since LSJ would suggest that διέχει does not mean “prevail, continue” in a temporal sense). Schneider further observed that Bart.'s *oportet se sic habere* suggests an original δεῖ οὕτως ἔχειν, but the οὕτως would perhaps have been omitted more easily if the word order were δεῖ ἔχειν οὕτως ἕως, which also makes the corruption from διέχει to δεῖ ἔχειν easier.

**7.48 οὕτως]** Deduced from Bart.'s *sic*; probably lost through haplography with the following ἕως.

## 8

**8.51 τὸν μῆνα]** The full moon at midmonth makes for an obvious division, especially as the brighter nights more readily allow for civic festivals; in Athens alone, e.g., the Synoikia, Greater Mysteries, Lenaia, Anthesteria, and City Dionysia all took place at midmonth. The locus classicus for days of the moon/month and related activities is Hes. *WD* 770 ad fin. General awareness of the month's quarters and eighths is less clear. For an excessive example of being guided by the moon, cf. Theophrastos' *Deisidaimon*; *Charact.* 16.10; for further parallels, see H. Bolkestein, *Theophrastos' Charakter der Deisidaimonia als religionsgeschichtliche Urkunde* (Giessen 1929 = *Religionsgeschichtliche Versuche und Vorarbeiten* 21.2) 44-51. Our text of course is more interested in the relation between the moon and weather; cf. Aratos 805-810

σήματα δ' οὗ τοι πᾶσιν ἐπ' ἡμασι πάντα τέτυκται·  
 ἄλλ' ὅσα μὲν τριτάτῃ τε τεταρτάτῃ τε πέλονται  
 μέσφα διχαιομένης, διχάδος γε μὲν ἄχρις ἐπ' αὐτὴν  
 σημαίνει διχόμηνον, ἅτ' ἀρ' ἄλιν ἐκ διχομήνου  
 ἐς διχάδα φθιμένην· ἔχεται δέ οἱ αὐτίκα τετράς  
 μηνὸς ἀποιχομένου, τῇ δὲ τριτάτῃ ἐπιόντος.

Pliny *NH* 18.350 *sunt et ipsius lunae viii articuli, etc.*

**8.53 νομηνίας ὥς ἀπ' ἀρχῆς]** This is all too obvious, as most Greek cities called the first day of each month νομηνία (vel sim.); see A. E. Samuel, *Greek and Roman Chronology* 14 f. and passim.

## 9

**9.58 πρωί]** This adverb meaning "early" is usually applied to days (less often to seasons). No other source defines as precisely as here but most people would have assumed that it would end by noon.

**9.58 δείλη]** Cf. *Il.* 21.111 ἢ ἠὼς ἢ δείλη ἢ μέσον ἡμαρ, but Xen. *An.* 1.8.8 ἢδη τε ἦν μέσον ἡμέρας ... ἡνίκα δὲ δείλη ἐγένετο.

**9.59 τὰ τῆς νυκτὸς μέρη τὰ ἀνάλογα]** Since the moon is not correlated to the night the way the sun is to the day, we must assume that the analogous parts of the night are simply the equivalent temporal divisions, however difficult they must have been to determine.

**9.63 κατὰ τὸν ὑπογεγραμμένον τρόπον]** For ὑπογράφειν = “write below,” cf. Heron Alex. *Def.* p. 14 Heiberg, the first sentence after the table of contents, καὶ τὰ μὲν πρὸ τῆς γεωμετρικῆς στοιχειώσεως τεχνολογούμενα ὑπογράφων σοι καὶ ὑποτυπούμενος, κτλ; LSJ s.v. I 1. Wood awkwardly translates “in accordance with the method hereafter stated,” but perhaps all that is meant is “as in the way illustrated by all that follows” in *DS* (as is indeed the case) rather than “method.” Hort opts for “The accepted method,” as if it were synonymous with Aristotle’s τὸν ὑφηγημένον τρόπον (*NE* 1108a3), “The accepted method,” but it is not clear what this would mean, in a work as unmethodical as *DS*.

## 10

**10.64 ὕδατος]** For Theophrastos’ views on the origin of rain, see above, on 3 ὑγρότερα γινόμενα.

**10.64 δοκεῖ]** A modest beginning.

**10.65-6 ἐπιφοινίσσον]** Elsewhere in early authors this verb is used only by [Aristotle] in *Physiog.* (Lucian uses the active in a transitive sense.) Dawn is famously rosy (fingere) in the poets (see West on Hes. *WD* 610), but not just before rains; *DS* must be referring to a more unusual reddish color that signaled this. Cf. Matthew 16.2 ὁψίας γενομένης λέγετε, Εὐδία· πυρράζει γὰρ ὁ οὐρανός. (But people do not recognize “The signs of the times,” σημεῖα τῶν καιρῶν). Red skies also occur in perhaps the most famous English weather sign: “Red sky at night, shepherd’s delight; red sky in morning, shepherd’s warning” (Marriott 309 ff., with variants).

**10.66 σημεῖον ... ἐπισημαίνει]** In context these words can refer only to the coming of rain. These and similar ellipses are fleshed out in the translation. The verb, here and at 21.140, where again no object is specified, thus means something like “is significant.” Elsewhere in weather literature, especially in *parapegmata*, ἐπισημαίνει is attached to certain days to indicate that the day in question marks a seasonal change; cf. also *Geop.* 7.10, where the setting of the Pleiades, the equinoxes, etc. are summed up with καὶ καθόλου περὶ πάσας τὰς ἐπισημασίας, and in general A. Rehm, “Episemasiai,” *RE* Supplb. 7 (1940) 175-198. (LSJ s.v.

ἐπισημασία III 2 mistakenly defines the word's occurrence in *Geop.* merely as “changes in the weather,” rather than as “points in the year when changes in the weather are likely to occur.”) Lehoux *Parapegmata* 130-137, allows that ἐπισημαίνει is used like σημαίνει here (132 n. 29), but argues that at 22.147 it has the meaning it regularly has in weather literature, “indicates a change in the weather,” but it seems better to understand the simplex and compound as synonyms in *DS*. See further, Lehoux, “Impersonal and intransitive ἐπισημαίνει,” *CP* 99 (2004) 78-85.

**10.66 αὐθημερόν]** V's —ών falls just short of the truth. The Aldine's αὐθημερινόν, a much rarer and much later word (although it has been conjectured for Eupolis fr. 205 K-A), would have to be an adjective modifying an understood ὕδωρ, which is not impossible (cf. Polyainos *Strategemata* 4.3.32 γάλα αὐθημερινόν), but the adverb αὐθημερόν, common from the fifth century on (Aischylos, Thuc., Hdt., Aristoph.) is far preferable. (Thus for LSJ s.v. αὐθημερινός 4 “= sq. [i.e., αὐθημερός], Thphr. *Sign.* 10,” read “= sq., Polyaen. 4.3.32.”)

**10.68 τριταῖα]** Sc. ὕδατα; cf. Pi. *N.* 7.17 f. σοφοὶ δὲ μέλλοντα τριταῖον ἄνεμον | ἔμαθον.

## 11

**11.71 ῥάβδοι]** These rays or streaks of light are explained by Aristotle *Mete.* 3.2-6, esp. in the last chapter. They, like halos, rainbows, and mock suns (παρήλιοι, see below, 22.151) are all said to be due to one form or another of reflection (*Mete.* 371b18-21), the important factors being the amount and location of moisture present. Whereas rainbows display colors in the sky opposite the sun, halos are gleaming (and colorless) circles immediately surrounding it. ῥάβδοι (like mock suns) occur alongside the sun (not above, below, or opposite), either at sunrise or, most often, at sunset, neither too near nor too far from the sun (372a12-17, 377b27-31). The reflection from mist or clouds surrounding the sun or moon, when it is of uneven consistency, will appear to the eye as only incomplete, straight sections of a rainbow (373b33-74a18, 377a31-78a17). Aristotle regards these rays as a sign of rain but less so than mock suns (377b23-26). See further *De Mundo* 395a35 f. ῥάβδος δ' ἐστὶν ἱριδος ἔμφασις εὐθεῖα, Ps.-Plut. *Plac.* 3.6 (= Aët. 3.5.6), Seneca



*QN* 1.9-11 (who translates as *virgae*), Alexander in *Aristotelis Mete.* 173.31 ff. Hayduck, Olympiodorus in *Aristotelis Mete.* 210.5, 265.15 Stüve; Gilbert 615 n. 1, 617.

A modern explanation of this phenomenon could be that *rhabdoi* are sun pillars above (and below if the sun is high enough above the horizon at sunrise and -set) mock suns, which satisfy all of Aristotle's criteria, but which also occur when a sun pillar of greater brightness can be seen above (and below) the sun itself, the existence of which is explicitly denied in Aristotle's account: ἐκ πλαγίας αἰεὶ καὶ οὐτ' ἄνωθεν οὐτε πρὸς τῇ γῇ οὐτ' ἐξ ἐναντίας, *Mete.* 372a11 f. See Greenler 65-72 with pl. 3-3 for an explanation of how the atmospheric presence of asymmetric ice crystals can produce pillars of light above light sources at or near the horizon.

**11.71-2 νοτόθεν ... βορρᾶθεν]** To the south and north of the sun, not due south and north; see above on ῥάβδοι. Two uncommon adverbs, usually in the formula γείτων βορρᾶθεν, γείτων νοτόθεν, as in Plato's will (D.L. 3.41, 42) and (in a reasonable restoration of Kirchhoff) *IG* I<sup>3</sup> 1458.5 (and restored in line 2 and in 426.70 in this inscription); cf. also *IG* II<sup>2</sup> 1241 and Hipp. *Vict.* 2.37; see further, below on 53.390.

**11.72 ἀνίσχων]** This verb is regularly used of the rising sun (6 × by Hdt. alone).

**11.72-3 μέλαν σημεῖον]** If the sun shines clear at sunrise, without any blemish, almost like a sacrificial animal, then fair weather will follow; see below, 50.363-4. Otherwise, it is a sign of rain, as here and below, c. 27; cf. also Arat. 836 f. ἢ εἴ που μελανεῖ· καὶ τοι τὰ μὲν ὕδατος ἔστω | σήματα μέλλοντος, Vegetius 4.41.4 *sol ... pluvia sit independente maculosus*, Sunspots? See below, c. 50. Wood 72 n. 61 records that sunspots were visible to the naked eye on September 4th, 1893. (Of course, one hopes that nobody looked directly at the sun without some sort of protection.) Wood may well be right in conjecturing σῆμα, which a careless scribe would understandably have turned into the frequently occurring σημεῖον.

**11.73 ἴσχη ... ἀνέχη]** V's error (ἀνίσχη) can be attributed to scribal error arising from the preceding ἀνίσχων; although ἴσχειν usually has a more charged sense than ἔχειν (cf. LSJ s.v. ἴσχω), we regard ἴσχη as the

choice of the author and leave it untouched; see below, 13.86, where V “corrects” ἴσχωσιν to ἔχωσιν. If ἴσχη did not intervene, Schneider’s conjecture for ἀνέχη would be unnecessary, as the simplex could retain the meaning of the immediately preceding complex; see n. ad 2.10, ἀνατέλλοντι δύνῃ.

This would be a good place for *DS* to have mentioned the weather sign found in Hes. *WD* 547-553, where a wide-spread morning mist (ἡώιος ... ἀήρ) signals evening rain or wind.

**11.73-4 ἀκτῖνες ... ἀποτείνωσι πρὶν ἀνατεῖλαι]** Cf. Arat. 869 f. ἔτ’ ἐόντι πέρην ὅποτε προταθεῖσαι | ἀκτῖνες φαίνωνται ἐπίσκοιοι ἡῶθι πρό, Pliny *NH* 18.344 *si ante exortum nubes globantur, hiemem asperam denuntiabunt*, *Geop.* 1.3.2 ἀνατέλλοντος δὲ τοῦ ἡλίου, ἂν παρὰ τὰς ἀκτῖνας σκοτεινὸν νέφος φανῇ, ὄμβρον δηλοῖ. V’s ἀποτείνωσι is preferable to M’s ἀνα-, which probably arose from dittography from the words before and after.

**11.75 καταφερομένου]** The same genitive absolute construction used thrice by Aristotle, *Mete.* 372a13, *HA* 552b21, 623a21.

**11.77 καυματίας]** Masc. adjective (sc. ἥλιος). This word appears three other times in *DS* (26.178, 180, 50.363) and nowhere else, although καυματ[ίας] is reasonably restored at *P. Vienna gr.* 1 col. 2.25 (see intro. p. 15 and Neugebauer op. cit. p. 43). καυματώδης is more usual, appearing in (i.a.) Aristotle, *Th.*, and even here in *DS* (36.259). Bonaventura’s tentative καυματίσας is not necessary.

## 12

**12.79 πανσελήνῳ]** Sc. νυκτί, as at Schol. in Aratum 188 ἐν νυκτί πανσελήνῳ (cf. also Arist. *HA* τὰς νύκτας π.), and construe as an dative of time, as at *DS* 8.54, 50.365, Hdt. 2.47 τῇ αὐτῇ π., Schol. in Aristoph. *Ach.* 84 τῇ π. (The usual phrase is ἐν τῇ πανσελήνῳ.) *DS*, however, is the only one to write σελήνη πανσελήνῳ (also in 50.365), which might be thought to read oddly: “The moon at full-moon night.” An easy change, which perhaps should be resisted, is to read -ος; cf. Thuc. 7.50 ἐτύγχανε γὰρ [sc. ἡ σελήνη] πανσέληνος.

**12.79 ἀνίσχουσα]** The full moon rises at sunset.

**12.80 μείς]** As this paragraph and below, 27.185, show, *DS* uses this word for a crescent moon. Cf. Chrysippos fr. 677 *SVF* (2.199.33 f. = Stob. 1.219.24) μείς δ' ἐστὶ ... τὸ φαινόμενον τῆς σελήνης πρὸς ἡμᾶς ἢ σελήνη μέρος ἔχουσα φαινόμενον πρὸς ἡμᾶς.

**12.80-81 ἐὰν μὲν ἦ ἀργυρώδης εὐδίαν, εἰ δὲ πυρώδης ἄνεμον, ἐὰν δὲ ζοφώδης ὕδωρ σημαίνει]** For our author a rather long periodic sentence, perhaps built up over time by accretion, as is suggested by the εἰ of the second clause, which we do not regularize. Note that Arat. 802-804 contains these same three signs in the same order: πάντα γὰρ καθαρῇ κε μάλ' εὐδία τεκμήραιο, | πάντα δ' ἐρευθομένη δοκέειν ἀνέμοιο κελεύθους, | ἄλλοθι δ' ἄλλο μελαινομένη δοκέειν ὑετοῖο. Cf. also Nigidius Figulus ap. Schol. in Germanicum 112 *si rubet* [sc. *luna*] *quasi aurum, ventos ostendit*; Lucan 5.549 *ventorumque notam rubuit*, Pliny *NH* 18.347 *si splendens exorta puro nitore fulsit, serenitatem; si rubicunda, ventos; si nigra, pluvias portendere creditur*.

This reading was agreed upon by the two editors with only the various mss. readings before us; it then seemed further confirmed by the parallels in Aratos and Pliny.

**12.81-2 σημαίνει δὲ ὅτι ἂν σημαίνῃ τριταῖος ὧν ὁ μείς]** Oddly phrased, probably reflecting poor composition (of the cut-and-paste variety) rather than textual corruption, the over-all idea being to state that the sign conditions of the previous clause pertain (most) on the third day of the month, a particularly significant (the *mot juste* here) day. Cf. 10.67-9, 51.370, and most of all *CCAG* 8.1.139.18-22, which lists five weather signs for the third day of the month: τριταῖα λεπτή καὶ καθαρὰ, εὐδιος. τριταῖα ἀμφοτέραις ταῖς κεραταῖς ἐξ ἴσου φαίνουσα, εὐδιον ἄνεμον δηλοῖ διὰ νυκτὸς. τριταῖα λεπτή πυρρά, πνεύματα μέλλοντα δηλοῖ. τριταῖα βόρειον μέρος καθαρὸν ἔχουσα, νότον δηλοῖ. τριταῖα παχὺ κέρας ἔχουσα καὶ παχεῖα οὖσα, ἢ νότον ἢ χειμῶνα σημαίνει.

### 13

**13.83 ἀστέρες πολλοὶ διάπτοντες]** The usual term in scientific writings for shooting stars; i.e., meteors which are seen to burn up on entering the atmosphere. cf. Anaxag. 59 A 1 (D. L. 2.9) τοὺς τε διάπτοντας

οἷον σπινθῆρας ἀπὸ τοῦ ἀέρος ἀποπάλλεσθαι, Arist. *Mete.* 341b35, *De Mundo* 395a32. See also Aristoph. *Pax* 838 f. τίνες δ' ἄρ' εἰς οἱ διατρέχοντες ἀστέρες | οἱ καόμενοι θεοῦσιν; Such impressive and irregular occurrences would quite naturally be taken as omens; cf. *Il.* 4.75-77: (Athena)

βῆ δὲ κατ' Οὐλύμποιο καρήνων ἀίξασα.  
οἷον δ' ἀστέρα ἦκε Κρόνου πάις ἀγκυλομήτεω,  
ἣ ναύτησι τέρας ἦε στρατῷ εὐρέι λαῶν.

And in Peripatetic literature, very much in agreement with *DS*, cf. *Probl.* 26.23 (942b16-19) διὰ τί, ὅταν ἀστέρες διάττωσιν, ἀνέμου σημεῖον; ἢ ὅτι ὑπὸ τοῦ πνεύματος φέρονται, καὶ πρότερον ἐκεῖ γίνεται πνεῦμα ἢ παρ' ἡμῖν; διὸ καὶ ἀφ' οὗ ἂν τόπου φέρονται οἱ ἀστέρες, ἐν τούτῳ καὶ τὸ πνεῦμα γίνεται.

See below, 37.270 f., where it is said that if meteors are seen to come from all sides, winds too be many. Aratos 926-932 deals with both possibilities:

καὶ διὰ νύκτα μέλαιναν ὅτ' ἀστέρες αἴσσωσι  
ταρφέα, τοῖ δ' ὀπιθεν ῥυμοὶ ἐπιλευκαίνωνται,  
δειδέχθαι κείνοις αὐτὴν ὁδὸν ἐρχομένοιο  
πνεύματος· εἰ δέ κεν ἄλλοι ἐναντίοι αἴσσωσιν,  
ἄλλοι δ' ἐξ ἄλλων μερέων, τότε δὴ πεφύλαξο  
παντοίων ἀνέμων, οἳ τ' ἄκριτοὶ εἰσι μάλιστα,  
ἄκριτα δὲ πνεύουσιν ἐπ' ἀνδράσι τεκμήρασθαι.

See further Lydos *De Ost.* 20 (48.10-13 Wachsmuth) εἰ ἀστὴρ διάττοι ἀπὸ τοῦ νότου ἐπὶ τὸν βορρᾶν, οὐ μόνον αὐτὸν πνεῦσαι τὸν νότον, ἀλλὰ καὶ πόλεμον τοῖς ἐπιθαλασσίοις δηλοῖ, Ptol. *Tetr.* 2.14.10 καὶ τῶν ἐπιγινομένων δὲ κατὰ καιροὺς ἐν τοῖς μετεώροις αἱ μὲν τῶν κομητῶν συστροφαι ὥς ἐπὶ πᾶν αὐχμοὺς καὶ ἀνέμους προσημαίνουσι καὶ τοσοῦτῳ μείζονας ὅσῳ ἂν ἐκ πλεόνων μερῶν καὶ ἐπὶ πολὺ ἡ σύστασις γένηται. αἱ δὲ διαδρομαὶ καὶ οἱ ἀκοντισμοὶ τῶν ἀστέρων, εἰ μὲν ἀπὸ μιᾶς γίνονται γωνίας, τὸν ἀπ' ἐκείνης ἄνεμον δηλοῦσιν· εἰ δ' ἀπὸ τῶν ἐναντίων, ἀκαταστασίαν πνευμάτων· εἰ δὲ ἀπὸ τῶν τεττάρων, παντοίους χειμῶνας μέχρι βροντῶν καὶ ἀστραπῶν καὶ τῶν τοιούτων, Verg. *G.* 1.365-367 *saepe etiam stellas vento impendente videbis | praecipitis caelo labi, notisque per umbram | flammaram longos a tergo albescere tractus*, Pliny *NH* 18.351, Seneca *NQ* 1.1.11, 1.14.6, *Geop.* 1.11.9, Anon. *Laur.* 8.6.

**13.84 ἀκτῖνες ἀθρόαι]** See next lemma.

**13.85 χειμῶνος]** Not unreasonably, Furlanus, ignorant of V, supplied ὕδατος. It remains possible that V's reading itself is nothing more than an ancient supplement, and that ὕδατος is to be either printed or understood. Note that "rain" is suggested by the parallel passages: Pliny *NH* 18.342 *cum occidentis aut orientis radii videntur coire, pluvias*, 343 *si in ortu aut in occasu contracti cernentur radii, imbrem* (note that Rackham, in the Loeb, unaware of the parallel passages, mistranslates *contracti* as "shortened."), and Aratus 840-844

εἰ δέ οἱ ἦ ἀνιόντος ἢ αὐτίκα δυομένοιο  
ἀκτῖνες συνίωσι καὶ ἀμφ' ἐνὶ πεπλήθωσιν,  
ἢ ποτε καὶ νεφέων πεπιεσμένος ἢ ὃ γ' ἐς ἡῶ  
ἔρχεται παρὰ νυκτὸς ἢ ἐξ ἡοῦς ἐπὶ νύκτα,  
ὑδατί κεν κατιόντι παρατρέχοι ἤματα κεῖνα.

χειμῶνος is, however, supported by *CCAG* 8.1.138.33 ἐπισπώμενος εἰς ἑαυτὸν τὰς ἀκτῖνας, χειμέριος. (And to make things more interesting, *Geop.* 1.2.4 takes this as a sign of fair weather: καὶ ἀνατέλλοντι δὲ καὶ δυομένῳ εἰ συστελλόμεναι φαίνονται ἀκτῖνες καὶ νέφη πεπιεσμένα περὶ αὐτόν, εὐδίαν δηλοῖ.)

**13.86 οἶον ἐκλείποντος]** Cf. Aratos 862-865

ἀλλ' ὁπότ' ἡελίοιο μαραινομένησιν ὁμοῖαι  
ἐξαπίνης ἀκτῖνες ἀπ' οὐρανόθεν τανύωνται,  
οἶον ἀμαλδύνονται ὅτε σκιάησι κατ' ἰθὺ  
ἵσταμένη γαίης τε καὶ ἡελίοιο σελήνη.

**13.86 χρῶμα]** Hort adduces Pliny *NH* 18.356 *nube gravida candicante, quod vocant tempestatem albam, grando imminebit*.

**13.87 πόκοις ἐρίων ὅμοιαι]** An easy comparison; cf. Aristoph. *Clouds* 343 εἴξασιν (sc. νεφέλαι) δ' οὖν ἐρίοισιν πεπταμένοισιν, Arist. *Mete.* 374a3, Th. *Mete.* 1.24 "clouds ... rarefied like wool" (tr. Daiber 1992, p. 262), Aratos 938 f. πολλάκι δ' ἐρχομένων ὑετῶν νέφεα προπάρουθεν | οἷα μάλιστα πόκοισιν ἐοικότα ἰνδάλλονται, Varro Atacinus fr. 21 Morel-Büchner *nubes sicut vellera lanae constabunt*, Lucr. 6.504, Verg. *G.* 1.397 *tenvia nec lanae per caelum vellera ferri*, Pliny *NH* 2.356; Gilbert 493 n. 2.

**13.88 σημαίνει]** As Schneider notes, σημαίνουσι would be better Greek, but we, like him, leave the text as it is.

**13.89 πολύ]** Conceivably, as in the next clause, this was once ἐπὶ τὸ πολύ.

**13.89 ἐπὶ τὸ πολύ]** Used of signs that cannot be relied on as much as one identified as a σημεῖον *tout court*. *DS* has several phrases to indicate this: see on 46-7 ὥς ἐπὶ τὸ πολύ.

**13.89 ἶρις]** LSJ s.v. II 2, “any *bright-coloured circle* surrounding another body.” Atmospheric moisture being necessary for a heavenly rainbow (Arist. *Mete.* 373a35–b1), a small-scale rainbow could readily be taken as a sign of rain—but why from the south? On the rainbow as a weather sign, see further below on 22.147 ἶρις.

**13.89-90 περὶ λύχνον ἢ διὰ λύχνον]** Cf. Arist. *Mete.* 374a26-28 τὸ δὲ τοῦ λύχνου φῶς οὐ λευκὸν ἀλλὰ πορφυροῦν φαίνεται κύκλῳ καὶ ἱριῶδες. Lamps figure often among the weather signs; cf. 14.94, 34.248, 42.307-313, 54.397-400. For the reading of lamps in magic papyri, see Ganszyniec, “Lychnomanteia,” *RE* 13 (1927) 2115-19.

**13.90 νότια]** νότιος = “in or from the south”; here obviously the latter, as we are rarely interested in the weather elsewhere.

## 14

**14.91 μύκητες]** Similarly c. 42, below. In order to make sense of this and related passages it is important to distinguish the following: (i) the wick, which in Greek is μύξα, i.e., because like “mucus” it comes out of the “nose” of the lamp; see Kallim. *Epigram* 56 Pf. (ii) The snuff (or, in some older or archaizing British English translations, such as that of LSJ, “fungus”) that forms on the burnt ends of lamp wicks; in Greek μύκης, with the heteroclitic plurals μύκητες and μύκαι—but here, although this word is etymologically connected to μύξα (see Chantraine, *Dict. Etymol.* s.vv.), the immediate metaphorical sense is that of “mushroom,” because of the knobby appearance of a burnt wick-end; cf. Th. *HP* 1.1.11 for the basic sense “mushroom” and Archil. 252 W for the word used as a synonym for penis (with which in turn compare the modern scientific ad-

jective *phalloeides* to describe some mushrooms). But since it is not the mere presence of snuff (which will always form while the lamp burns) but the nature of the accompanying sparks/flame (for which various Greek words are used) that signal rain, *μύκητες* came to have (at least in texts referring to weather signs) the sense “sparks,” a meaning missing from LSJ and unrecognized by the commentators on the several texts. The clearest evidence for *μύκητες* = “sparks” is Aratos 976 f. (it is a sign of rain if) *λύχνοιο μύκητες ἀγείρωνται περὶ μύξαν | νύκτα κατὰ σκοτίνην* (*vel* *νοτίνην*, Kidd’s reasonable conjecture). It is stretching the limits allowed “poetic plurals” to speak in English of “snuffs” or “funguses” (for *fungi* used by Latin authors, see below) around one wick. The scholia ad loc. also take *μύκητες* = “sparks”: *τὸ πῦρ ὠμολόγηται ξηρᾶς οὐσίας, ὑγρὸς δὲ ἄηρ πολλάκις ἐν χειμῶνι ἐμπίπτων τῷ πυρὶ ἀποτελεῖ τούτους τοὺς σπινθήρας. ... ἄλλως· προσέχειν δὲ χρὴ ὁπόταν καὶ περὶ τὰς μύξας τῶν λύχνων μύκητες ἀθροίζωνται*. Similarly Schol. ad Arat. 980, *ὅταν οὖν περὶ ἀπτομένῳ λύχνῳ μύκητες συνιστῶνται χειμῶνος ὥρα, αἱ τε φλόγες τεταγμένως καὶ κατὰ φύσιν εἰς ὕψος αἴρωνται, ποτὲ δὲ πλαγιάζωνται, καὶ λεπταὶ πομφόλυγες περὶ αὐτὰς γίνωνται καὶ σπινθήρες ἀπορρέωσι, μὴ ἔστω σοι ἀπόβλητον, ἀπὸ κοινοῦ*; Apul. *Met.* 2.11 *iam vespera lucernam intuens Pamphile: “quam largus,” inquit, “imber aderit crastino.*” That is, one “reads” the sparkling red points of the *lit* wick.

Since wherever the word appears in the singular it refers to but one mushroom-shaped object, it is probably wrong to translate the plurals as “snuffs” (as Trypanis does in translating the passage from the *Hekale* given below) or to think of it a some sort of collective plural, which is implicit in modern discussions.

Cf. Aristoph. *V.* 260-263

κοῦκ ἔσθ' ὅπως οὐχ ἡμερῶν τεττάρων τὸ πλεῖστον  
 ὕδωρ ἀναγκαίως ἔχει τὸν θεὸν ποιῆσαι.  
 ἔπεισι γοῦν τοῖσιν λύχνοις οὗτοι μύκητες.  
 φιλεῖ δ' ὅταν τοῦτ' ἦ ποιεῖν ὑετὸν μάλιστα.

Kallim. *Hekale* fr. 25 Hollis (269 Pf.) *ὁππότε λύχνου | δαιομένου πυρόεντες ἄδην ἐγένοντο μύκητες* (Hollis translates “when, while the lamp was alight, fungus continually formed with the sparks,” but it would be more precise to say “fiery sparks continuously formed”); Agathias Scholasticus *Epigram* 85.1 Viansino (*AP* 5.263) *μήποτε, λύχνε, μύκητα φέροις, μηδ' ὄμβρον ἐγείροις*, schol. ad Aristoph. *V.* 262. Note too that Bart. translated *τρεις μύκαι* as *tres scintillae*. (Furlanus does not explain his conjecture *σπινθήρες* for *τρεις μύκαι*.)

The discussion above seems to make best sense of the Greek evidence. Classical Latin texts suggest that, as *OLD* s.v. *fungus* 1 b has it, the plural meant “a fur or mildew formed on the wick of a lamp,” which of course could not happen in the presence of a flame. Thus, Verg. *G.* 1.390-392 speaks of seeing *putris concrecere fungos*, “powdery snuff forms.” Pliny *NH* 18.357 says that it is a sign of rain *si in lucernis fungi, si flexuose volitet flamma*, where, note, the *fungus* is kept distinct from the action of the flame. In general, then, whereas Greeks read the flames, Romans, it would seem, studied extinguished lamps, discerning signs of rain in the powdery, fungus-like, grey excrescence on the blackened wick. Servius ad Verg. *G.* 392 explains how the ash is affected by the weather: *favilla, quae cum fumo solet egredi, prohibita aeris crassitate in lucernis residet et quasdam velut fungorum imitatur imagines*. See further below, 34.248, 42.307-13; Apul. *Met.* 2.11.

**14.92 πλήθους καὶ μεγέθους]** Hendiadys; cf. Anaxag. 59 B 1 fin. πλήθει καὶ μεγέθει (but perhaps these are the words of Simplicius; so Sider ad loc., p. 79 f.), Pl. *Rep.* 614a, D.C. 52.30.

**14.93 κεγχρώδεις]** See below, 25.170 f.

**14.94 <ὁ λύχνος> ]** The most likely word to complete the sense.

**14.94 διαλιπών]** For the use of this verb in the participle to mean “intermittent(ly),” cf. Arist. *Mete.* 362a28 διαλείποντες πνέουσιν (sc. ἄνεμοι), *Phys.* 226b27-31 (LSJ s.v. II 4). Here it refers to sparks, as is clearer in Vergil’s *scintillare* (*G.* 1.392). Th. *Winds* 1 distinguishes winds that are διαλείποντας from those that are ἀνωμαλεῖς, where presumably the latter blow even more irregularly than the former.

**14.94-5 οἶον πομφόλυγας]** Similarly as a sign of rain, Aratos 979 f. ἥ τε κοῦφαι πομφόλυγες, explained by the scholion ad loc., αἱ τε φλόγες τεταγμένως καὶ κατὰ φύσιν εἰς ὕψος αἴρωνται, ποτὲ δὲ πλαγιάζονται, καὶ λεπταὶ πομφόλυγες περὶ αὐτάς [sc. μύκητας] γίνονται καὶ σπινθῆρες ἀπορρέωσι.

**14.96 χειμῶνος ὄντος μύκαι]** σπινθῆρες was the conjecture of Furlanus. In the parallel passage on signs of storms (42.310 f.), we read καὶ ἐὰν χειμῶνος ὄντος μύκαι μέλαιναι ἐπιγίνονται, χειμῶνα σημαί-



νει, which strongly suggests that we should maintain μύκαι here. Assuming that the τρεῖς of the mss. is a corruption of ὄντος we fill out the thought with the same word as found on 42.311.

## 15

**15.97 ὄρνιθες]** On birds in general as weather signs, cf. Aristoph. *Aves* 596 f.

προερεῖ τις αἰὲ τῶν ὀρνίθων μαντευομένων περὶ τοῦ πλοῦ·  
“νυνὶ μὴ πλεῖ, χειμῶν ἔσται.” “νυνὶ πλεῖ, κέρδος ἐπέσται.”

Pliny *NH* 18.364 *Nec mirum aquaticas aut in totum volucres praesagia aeris sentire.*

**15.97 λουόμενοι]** Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) seems to suggest that birds do this to moisten themselves in advance of wind (which would dry them out): ἀπειλοῦσι δὲ πνεῦμα λουόμενοί γε ὄρνιθες, καὶ ἀνέμων τινὰς ἐμβολὰς ὑποφαίνουσι. Cf. Aratos 942 f. (as a sign of rain)

πολλάκι λιμναῖαι ἢ εἰνάλιαι ὄρνιθες  
ἄπληστον κλύζονται ἐνιέμεναι ὑδάτεσσιν.

Varro *Atac.* fr. 22.1-3 Morel-Büchner

*tum liceat pelagi volucres tardaeque paludis  
cernere inexpletas studio certare lavandi  
et velut insolitum pennis infundere rorem.*

Verg. *G.* 1.387 (*hic locus de Varrone est*, Servius ad 1.375)  
*et studio incassum videas gestire lavandi.*

**15.97 μή]** Primarily a generic negative of ἐν ὕδατι βιοῦντες (“non-aquatic”), but also serving as the proper negative in a conditional clause.

**15.98 φρῦνος λονόμενος]** We print V’s masculine against M’s feminine, regarding it as more likely to have been turned into the more usual feminine form than the reverse. φρῦνος is feminine also at Babrios 28.6, as guaranteed by meter and context. Three species of toad were known in Greece: *Bufo vulgaris*, *B. viridis*, and *Bombinator igneus* (D’Arcy W. Thompson, “Fauna,” in L. Whibley, *A Companion to Greek Studies* [Cambridge 1931] 45). Cf. *Probl.* 1.22 (862a10 f.) διὰ τί γίνεται τὰ ἔτη νοσώδη ὅταν γένηται φορὰ τῶν μικρῶν βατράχων τῶν φρυνοειδῶν;

**15.98 βάτραχοι μᾶλλον ἔδοντες]** The voice of the frog, a φιλόμβριος ὑγρὸς αἰοιδός (*AP* 6.43), was often taken as a forecast of rain. Cf. Aratos 947 αὐτόθεν ἐξ ὕδατος πατέρες βοόωσι γυρίνων (“fathers of tadpoles” = “frogs”), Ael. *NA* 9.13 ὅταν δὲ βάτραχοι γεγωνότερον φθέγγονται καὶ τῆς συνηθείας λαμπρότερον, ἐπιδημίαν δηλοῦσιν ὑετοῦ, Cic. *Ad Att.* 15.16b *pluvias metuo, ranae enim* ῥητορεύουσιν, *Div.* 1.15 *inest in ranunculis vis et natura quaedam significans aliquid per se, ipsa satis certa, cognitioni autem hominum obscurior*, Pliny *NH* 18.361 *ranae quoque ultra solitum vocales*, Plut. *Sollert. Animal.* 982e ἄλλως δὲ λαμπρύνουσι τὴν φωνήν, ὑετὸν προσδεχόμενοι· καὶ τοῦτο σημεῖον ἐν τοῖς βεβαιοτάτοις ἐστίν. On frogs, see Thompson *ibid.* (prev. lemma).

Some few weather signs in this text are aural and do not require sight of the animal itself; cf. *Il.* 10.274-276, where it is specifically said that Odysseus and Diomedes could hear but not see a heron, which Athena had sent as a favorable sign. Cf. cc. 39 f., 53 for some examples of bird cries. See the general index, s.v. sounds.

**15.99-100 σαύρα ... σαλαμάνδραν]** Th. (*De Igne* 60 f.) and others (e.g., Arist. *HA* 552b16) thought that the salamander (*S. maculata* or *atra*) was unaffected by fire, but this does not seem relevant here. Some lizards and salamanders do in fact resemble each other, but in fact the former are reptiles and the latter amphibia. The predictive powers of the lizard mentioned here are mild compared with the uses lizards are put to elsewhere; see A. D. Nock, “The lizard in magic and religion,” *Essays on Religion and the Ancient World* (Oxford 1972) 1.271-276.

**15.100 ἔτι δὲ καί]** *DS* is fond of emphasizing additions with δὲ καί (11 × elsewhere), only here with the further emphasis of ἔτι; hence our “furthermore ... also”; see Denniston 305.

**15.100 χλωρὸς βάτραχος]** On frogs as predictors of weather, see above and Hesych. s.v. μάντις· ὁ ἐν τοῖς κήποις βάτραχος. As the frogs themselves say in Aristophanes’ play (*Frogs* 246-249),

ἢ Διὸς φεύγοντες ὄμβρον  
ἔνυδρον ἐν βυθῷ χορείαν  
αἰόλαν ἐφθεγξάμεσθα  
πομφολυγοπαφλάσασιν.

**15.101 χελιδόνες ὕδωρ]** Cf. Arat. 944 f. λίμνην πέρι δηθὰ χελιδόνες αἰσσοῦνται | γαστέρι τύπτουσαι αὐτῶς εἰλυμένον ὕδωρ, Verg. *G.* 1.377 *arguta lacus circumvolitavit hirundo*.

**15.101 τύπτουσαι]** Cf. Pliny *NH* 18.363 *hirundo tam iuxta aquam volitans ut pinna saepe percutiat*, Varro Atac. fr. 22.4 Morel-Büchner *aut arguta lacus circumvolitavit hirundo*. During or just before a rain, swallows will skim along the surface of the water, “striking” it when they drop even lower to catch insects, which do in fact appear at times of rain (personal observation). Hauser *Bauernregeln* (Zurich 1975) 373 and 376 f. records a number of predictions of rain from low-flying swallows (but with no mention of their hitting water) as well as predictions of fair weather from their flying high. J. Morton, *The Role of the Physical Environment in Ancient Greek Seafaring* (Leiden 2001) 292, records that “sensors in the ears of swallows which register changes in atmospheric pressure and so warn the birds of development in weather conditions are described in *Incredible Journey: A Swallow’s Journey* (BBC 1, 8.00 pm, Thursday, 9 Jan. 1997).”

**15.103 ἀνακύπτων ὀσφραίνηται]** (This entire sentence was accidentally omitted by Wimmer.) Cf. Arat. 954 f. καὶ βόες ἤδη τοι πάρος ὕδατος ἐνδίοιο | οὐρανὸν εἰσανιδόντες ἀπ’ αἰθέρος ὀσφρήσαντο, Varro Atac. fr. 22.5 f. *et bos suspiciens caelum (mirabile visu) | naribus aerium patulis decerpsit odorem*, Ael. *NA* 7.8 βοῦς ἐὰν βοᾷ καὶ ὀσφραίνηται, ὕειν ἀνάγκη, Pliny *NH* 18.364 *boves caelum olfactantes seque lambentes contra pilum*, Verg. *G.* 1.375 f. *bucula caelum | suspiciens patulis captavit naribus auras*, Geop. 1.3.10 βόες πρὸς μεσημβρίαν ὀρῶσαι, *CCAG* 8.1.137 βοδὸς βοῶντος καὶ τὴν γῆν ὀσφραινομένου ὕειν ἀνάγκη.

## 16

**16.104 κορώνη]** Cf. Aratos 949-953, who surveys the crow’s way with water before rain:

ἥ που καὶ λακέρυζα παρ’ ἡϊόνι προῦχούσῃ.  
κύματος ἐρχομένου χέρσῳ ὑπέτυψε κορώνη,  
ἥ που καὶ ποταμοῖο ἐβάψατο μέχρι παρ’ ἄκρους  
ῶμους ἐκ κεφαλῆς, ἥ καὶ μάλα πᾶσα κολυμβᾷ,  
ἥ πολλὴ στρέφεται παρ’ ὕδωρ παχέα κρώζουσα.

There was what seems to be a distinct κορώνη θαλάσσιος, but as Kidd ad loc. shows *DS*, Aratos, and the remaining weather texts are surely referring to the common crow, as they use the same language elsewhere to describe their various characteristics, esp. their cries (see below). Note also Verg. *G.* 1.388 *tum cornix plena pluviā vocat improba voce* [Serv. ad loc. calls *vocat* poetic; *non enim vocat, sed denuntiat pluviā*], Hor. *O.* 3.17.12 f. *aquae nisi fallit augur | annosa cornix*, Lucr. 5.555 f. *caput spargens undis, velut occupet imbrem, | instabili gressu metitur litora cornix*, Lucan 5.555 f. *quodque caput spargens undis, velut occupet imbrem, | instabili gressu metitur litora cornix*, Geop. 1.3.7 κορώνη ἐπ' αἰγιαλοῦ τὴν κεφαλὴν διαβρέχουσα ἢ πᾶσα νηχομένη καὶ νυκτὸς σφοδρότερον κρώζουσα ὄμβρους προμηνύει.

For the crow as a sign of storm, see also below, 39.283 f., Arat. 1001 f. καὶ ἥσυχά ποικίλλουσα | ὥρῃ ἐν ἔσπερίῃ κραυγὴν πολύφωνα κορώνη, 1022 f. καὶ ἐννεάγηρα κορώνη | νύκτερον αἰδίδουσα, Arist. fr. 270.21 Gi. (Ael. *NA* 7.7), Plut. *QC* 674b. For the crow as a sign of fair weather, see below, 53.387 f.

**16.104 κορυσσομένη]** Maass *GGA* (1893) 628 withdrew his earlier conjecture περυσσομένη (*Aratus* 354), having come to regard κορυσσομένη as one of the many “hoch poetisch” words in *DS* (he was convinced that its whole clause is either a direct quotation of Archilochos or a close paraphrase, comparing the explicit quotation below, 45.334 f.) Derived from κόρυς, “helmet,” the verb used in the middle to indicate some movement of the head reminiscent of shaking one’s helmet; cf. *Il.* 4.442 and (of a wave) 4.424 (with Kirk’s n. ad loc.). Böhme 83 conjectured λακερυσσομένη, comparing Arat. 949 f. (see above).

**16.106 κόραξ]** A common fowl sign of foul weather; cf. esp. Arat. 963-969 (with the chief similarites underlined):

δή ποτε καὶ γενεαὶ κοράκων καὶ φῦλα κολοιῶν  
ὑδατος ἐρχομένοιο Διὸς πάρα σῆμ' ἐγένοντο,  
 φαινόμενοι ἀγγελιδὰ καὶ ἱρήκεσσιν ὁμοῖον 965  
 φθεγξάμενοι. καὶ που κόρακες δίους σταλαγμοὺς  
φωνῇ ἐμιμήσαντο σὺν ὑδατος ἐρχομένοιο,  
 ἥ ποτε καὶ κρώξαντε βαρεῖν δισσάκι φωνῇ  
μακρὸν ἐπιρριζεῦσι τιναξάμενοι πτερὰ πυκνά.

The raven’s sound was one of Demokritos’ weather signs: Plut. *De Sanit. Praec.* 14.129a (DK 68 B 147 = 581a Luria) ἄτοπον γάρ ἐστι

κοράκων μὲν λαρυγγισμοῖς καὶ κλωσμοῖς ἀλεκτορίδων καὶ συσὶν ἐπὶ φορυτῶ μαργαινούσαις, ὡς ἔφη Δ., ἐπιμελῶς προσέχειν σημεῖα ποιουμένους πνευμάτων καὶ ὄμβρων, τὰ δὲ τοῦ σώματος κινήματα καὶ σάλους καὶ προπαθείας μὴ προλαμβάνειν μηδὲ προφυλάττειν μηδ' ἔχειν σημεῖα χειμῶνος ἐν ἑαυτῷ γενησομένου καὶ μέλλοντος. Cf. Arist. fr. 270.21 Gi. (Ael. *NA* 7.7, a passage replete with avian weather signs attributed to Aristotle) κόραξ δὲ ἐπιτρόχως φθεγγόμενος καὶ κρούων τὰς πτέρυγας καὶ κροτῶν αὐτάς, ὅτι χειμῶν ἔσται κατέγνω πρῶτος. κόραξ δὲ αὖ καὶ κορώνη καὶ κολιοὺς δειλῆς ὀψίας εἰ φθέγγονται, χειμῶνος ἔσεσθαι τινα ἐπιδημίαν διδάσκουσι. κολιοῖοι δὲ ἱερακίζοντες ... ὑετὸν δηλοῦσι, Euphorion fr. 89 Powell ὑετόμαντις ὅτε κρώξειε κορώνη, Plut. *Sollert. Animal.* 129a, Nikand. *Ther.* 406 (with schol.) κόραξ τ' ὀμβρήρεα κρώζων, Hor. *O.* 3.27.10 *imbrium divina avis imminetium*, id. 3.17.12 *aquae augur*, Lucr. 5.1083-86. Ael. *NA* 6.19 says that the raven wants to imitate the sound of rain (βούλεται δὲ τῶν ὄμβρων μιμεῖσθαι τὰς σταγόνας ὁ κόραξ), which may explain the origin of this particular sign. For the raven as a sign of fair weather, see below, on 52.384-69. In general, crows are bad news; cf. Hes. *WD* 747 μήτοι ἐφεζομένη κρώξι (with West's n.).

**16.106 πολλὰς μεταβάλλον ἔωθεν φωνάς]** Pliny *NH* 10.43.60, Lucr. 5.1078-86, and Porphyry *Abstin.* 3.4 allude to the various sounds birds make, but at any one time their cry tends to be unvarying. Thus, we prefer to follow Bart. (as Schneider was minded to do), rather than follow the Greek mss., whose reading is banal, since all ravens regularly make different sounds and trying to discern two that are the same produced together is not easy.

**16.106 τούτων]** Partitive genitive; sc. φωνήν τινα.

**16.107 ἐπιρροιζήση]** Here and in Aratos (see above) this verb occurs between verbs referring to sounds made by the raven's voice and his wings. Wood translates as "croaks" (sim. LSJ and some commentators on Aratos), but Hort is surely right to understand it as a reference to the sound made by the raven's wings, as we see with the related words ῥοῖζος (Ael. *NA* 2.26, LXX *Wisdom of Solomon* 5.11) and ῥοῖβδος (Soph. *Ant.* 1004 πετρῶν γὰρ ῥοῖβδος οὐκ ἄσημος ἦν). As writers on rhetoric make clear, the word is vaguely onomatopoeic of the whirring made by something moving rapidly through the air, such as an arrow, a falling tree, or a

whip, which is not a sound one associates with the raven's croak. See further, Kidd on Arat. 969.

**16.107 τινάξῃ τὰ πτερά]** Schneider's suggestion makes good sense (cf. *Od.* 2.151 τινάξασθην πτερὰ πυκνά, the model for Aratos 969), as the active cannot be used absolutely, and "wings" are suggested by Bart. (see app. crit.), Arat. 969, and Arist. fr. 270.21 (the last two given above).

**16.109 φθειρίζεται]** That birds suffer from lice is mentioned by Arist. *HA* 557a10-14. See below, 17.118.

**16.109 ἐάντε εὐδίας ἐάντε ὕδατος]** If this is to make any sense, it must mean that if during fair weather the raven makes the same sound that it does during rainy weather (imitating raindrops; on the mimicry of ravens, cf. further below, on 40.290 f.), rain can be expected. J. Pollard, *Birds in Greek Life and Myth* (London 1977) 112 understands the raven's making this sound while it is raining as "a sign of *protracted* bad weather" (our emphasis).

**16.110 σταλαγμούς]** Imitated, it would seem, by Aratos 966 (see above). Kidd persuasively argues that σταλαγμούς makes for acceptable Aratean metrics.

**16.111 κολοιοί]** Jackdaws; for them and ravens together, cf. *Geop.* 1.3.8 κόρακες καὶ κολοιοὶ ἄθρόως ἐπιφαινόμενοι καὶ κρώζοντες; for their imitating hawks, cf. Arist. fr. 270.21 (given above); for the daw as a weather sign, cf. *Ov. Am.* 2.6.34 *pluviae graculus auctor aquae*. (For the *Geoponica* as evidence for Theophrastos, see Sharples *Th. Comm.* 5, on fr. 383.)

**16.111 ἱερακίζουσιν]** How?—by soaring/hovering or by screeching? Since this verb appears only here and in the obviously related Arist. fr. 270.21 (quoted just above, on κόραξ), it is impossible to say for sure (Aratos 965 f., quoted above, may be just a guess), but c. 40 suggests the latter. The verb appears again only in the later derivative weather literature: Anon. *Laur.* 11.22 and *CCAG* 8.1 p. 138.9. Apostolios *Paroim.* cent. 1.38 οἱ κολοιοὶ δὲ ἱερακίζοντες καὶ πετόμενοι πῇ μὲν ἀνωτέρω, πῇ δὲ κατωτέρω κρυμὸν ("frost") καὶ ὑετὸν δηλοῦσιν is copied from Aristotle/Aelian.

## 17

**17.114 ἱέραξ]** This had been the only place in classical literature where the hawk is said to be a weather sign, except for one unclear passage in Dionysios *De Aucupio* 2.9 (quoted below, on 18.123 ἔρωδιός), where hunters are said to look to the hawk for a sign just as (?; the Greek is ὁπόσα) sailors look to the heron for a sign of wind; that is, presumably, hunters read the hawk's flight for signs of wind. We can now add a newly published epigram of Poseidippos, 21 Austin-Bastianini, beginning νηὶ καθελκομένη πάντα πλέον' ἰνὶ φανήτω | ἴρηξ. See Sider, "Posidippus on weather signs and the tradition of didactic poetry," in K. Gutzwiller (ed.), *The New Posidippus: A Hellenistic Poetry Book* (Oxford 2005) 166-170.

**17.114 καθεζόμενος καὶ εἴσω εἰσπετόμενος]** Probably *hysteron proteron*, as translated by Wood and Hort. εἰσπτόμενος would be an easy change. Still, it has to be said that the only way a hawk is going to get in a tree is by flying, so there may be deeper corruption. Thompson *GGB* 117 abbreviates the passage, calling "a hawk sitting on a tree a sign of rain." For the dependence of hunters on hawks as a weather sign, see Dionysios *De Aucupio* 2.9, quoted below, on 18.123 ἔρωδιός.

**17.115-6 φανῶσι]** Sc. on the mainland, as noticed by McCartney *CW* 14 (1921) 91. This is made clear in the parallel passages; cf. Aratos 1094-96, οὐδὲ μὲν ὀρνίθων ἀγέλαις ἡπειρόθεν ἀνὴρ | ἐκ νήσων ὅτε πολλαὶ ἐπιπλήσσωσιν ἀρούραις | ἐρχομένου θέρεος, χαίρει. Likewise Arist. fr. 365 Gi. (cited in full in the next lemma), where ἐκ τῶν νήσων πετόμενοι τοῖς γεωργοῖς seems to assume an appearance on the mainland. Cf. also Plut. fr. 20 Sandbach ξηρότεραι γὰρ αἱ νῆσοι τῶν ἡπείρων ὑπάρχουσαι ὥς φησι Πλούταρχος, θάπτον καὶ ῥᾶον τοῦ αὐχμηροῦ καταστήματος ἀντιλαμβάνονται. διὸ καὶ τὰ ὄρνεα φεύγει καὶ ταῖς ἡπείροις ἐπιπελάζει. The failure to mention the mainland is probably due to carelessness on the part of the author (he may have thought it not worth mentioning), rather than scribal omission.

**17.116 ὄρνιθες οἷ βιοτεύουσιν ἐν νήσῳ]** There is a diminuendo in terms of result: (i) rain, (ii) less water, (iii) drought; but the number (and configuration?) of birds producing these results does not correlate in any meaningful way: (i) packed together (in large number?), (ii) moderate in

number, (iii) very many. A likely explanation is that three (literally) isolated observations were brought together by the redactor and put together without comment. Cf. Arist. fr. 365 Gi. (Schol. in Arat. 1095 ed. Martin) ὅταν μὲν ὑγρὸς ἦ καὶ ψυχρὸς ὁ ἀήρ, τὸ τηνικαῦτα καὶ αἱ νῆσοι βρεχόμεναι ἀναφύουσι, καὶ τὰ ἐν αὐταῖς ὄρνεα τρέφουσιν. ὅταν δὲ αὐχμώδης ἦ καὶ ξηρὸς, τότε παντελῶς τῶν νήσων μὴ ἀναφνουσῶν ἐπὶ τὴν γῆν τὰ ἐν ταῖς νήσοις ὄρνεα φεύγουσιν, εἰς ἣν δύνανται κἄν ἐξ ὀλίγου τρέφεσθαι. καὶ οἱ κολοιοὶ δὲ ἐκ τῶν νήσων πετόμενοι τοῖς γεωργοῖς σημεῖον αὐχμοῦ καὶ ἀφορίας. ἐὰν δὲ ἔμμετροι χωροῦσι, εὐκαρπίαν δηλοῦσιν. (Martin considers τρέφεσθαι the last word of the quotation from Aristotle, but the entirety of the scholion may be his.) See also Aratos 1094-96, quoted in the previous lemma.

**17.117 μέτριοι** = ὀλίγοι, a rare usage; LSJ s.v. II gives only Xen. Cyr. 2.414 [ἱππεῖς] μέτριοι, “a reasonable number of horsemen,” but the same sense is found below, 24.163.

**17.117 αἰξὶ καὶ βουσίν** And good for their herdsmen and owners as well. A rare instance in *DS* of at least the hint of some practical use for a weather sign.

**17.117 ὑπερβολῇ** “Excessively,” with πολλοί (LSJ s.v. I 4), a common Aristotelian usage (“pro adverbio usurpatur,” Bonitz s.v.).

**17.118 ὄρνιθες καὶ ἀλεκτρυόνες** The most common of domestic birds, chickens (usually hens, but sometimes including roosters) could be called simply “birds”: Athen. 373a ἀλλὰ μὴν καὶ ὄρνιθας καὶ ὄρνίθια νῦν μόνως ἢ συνήθεια καλεῖ τὰς θηλείας, cf. also Aisch. *Eum.* 866 ἐνοικίου δ' ὄρνιθος, Soph. fr. 436 θήλειαι δ., Nikand. *Ther.* 558 ὄ. κατοικίς, Thompson *GGB* 33. On chickens as weather signs, cf. Demokritos 68 B 147 (quoted above, on 16.106 κόραξ), Aratos 960-962:

καὶ τιθαὶ ὄρνιθες, ταὶ ἀλέκτορος ἐξεγένοντο,  
εὔ ἐφθειρίσαντο καὶ ἔκρωξαν μάλα φωνῇ,  
οἷόν τε σταλάον ψοφείη ἐπὶ ὕδατι ὕδωρ.

Arist. fr. 270.21 Gi. ἀλεκτρυόνες γε μὴν καὶ ὄρνιθες οἱ ἠθάδες περυσσόμενοι καὶ φρυαττόμενοι καὶ ὑποτρύζοντες χειμῶνα δηλοῦσιν, *Geop.* 1.3.8 αἱ κατοικίδιαι ὄρνις πυκνῶς κονιόμεναι ... ὄμβρον σημαίνουσι, Plut. *De Tuenda San.* 129a.



**17.119 ὕδωρ]** Not modifying ὕδωρ, but an impersonal accusative absolute; but note 51.376 ὕσαντος. As Aristoph. *Clouds* 1280 Δία ὕειν ὕδωρ shows, Zeus (or clouds) rains down water (or gold). ὕδωρ is never the subject of this verb in the active, only in the passive.

## 18

**18.120 ἐάν νῆττα ἡμερος]** The domestic duck. For ducks in general as a weather sign, cf. below, 28.191, Aratos 970 f.

καὶ νῆσσαι οἰκουροὶ ὑπωρόφιοι τε κολοιοὶ  
ἐρχόμενοι κατὰ γεῖσα τινάσσονται περὺ γέσσιν.

Furlanus' conjecture (or reading of ms. N), ἡ νῆττα ἡμερος (ἐάν), which produces an unwanted definite article and an ungrammatical predicate position for the adjective, has been followed by subsequent editors.

**18.120 ὑπιοῦσα]** Perhaps merely neutral, “getting under” (Hort), but this verb often indicates sneaky behavior, which would be appropriate here. Aratos, however, keeps it neutral.

**18.120 ὑπὸ τὰ γεῖσα]** In a well built structure there would be no room between eaves and cornice (γεῖσον) for a duck to perch — see A. T. Hodge, *The Woodwork of Greek Roofs* (Cambridge 1960) cc. 7 f.—, but doubtless in many ordinary buildings there would be, or would develop, crevices for perching, if not for ducks then for smaller birds; cf. Theaitetos *AP* 10.16.5 ὑπὸ γεῖσα δόμους τεύξασα χελιδών. For roofs in general as a locus for bird signs, see West on Hes. *WD* 747.

**18.121 ἀλεκτρονέες]** According to Th. fr. 355A (Ael. *NA* 3.38) cocks do not crow when it is moist, which contradicts this sign, but does not disprove Th. as author.

**18.123 ἐρωδιός]** Wood, Hort, and (on the imitation in Aratos) Kidd take this bird to be the heron; Thompson, however, *GGB* 104 (on the parallel passage in Aristotle) thinks it “probably” a shearwater, although this term has been applied to different species (Thompson, *CR* 32 [1918] 92 ff.). With no great confidence, we translate with the majority. Cf. Arat. 972 (continuing the sentence from the passage quoted above on ducks) ἢ ἐπὶ κῦμα διώκει ἐρωδιός ὃξὺ λεληκώς, Aristotle fr. 270.21 Gi. ἐρωδιός δὲ κνεφαῖος (= ὄρθιον) βοῶν τὰ αὐτὰ (sc. χειμῶνα ἰσχυρόν)

... . πετόμενος δὲ ἔρωδιός τῆς θαλάττης εὐθὺ ὕδωρ ἐξ οὐρανοῦ  
 ῥαγήσεσθαι αἰνίττεται, Dionysios *De Aucupio* 2.9 init. φίλτατοι δ' εἰσὶν  
 οἱ ἔρωδιοι τοῖς ἀνθρώποις καὶ προσημαίνουσιν εὐδίαν τε καὶ χει-  
 μῶνα, μάλιστα πρὸς ἐκεῖνο τὸ μέρος, ὅθεν ἂν μέλλῃ σφοδρότατος  
 ἄνεμος πνεῖν, ἐπὶ τοῖς στήθεσι τὰς κεφαλὰς κατακλίνοντες. ναύτης  
 γοῦν οὐκ ἂν ποτε ἐκὼν ἔρωδιὸν ἀποκτείνειεν, ἐπειδὴ πιστεύονται τοῖς  
 ἁλιεῦσιν ἐν τῇ θαλάττῃ σημαίνειν ὅποσα τοῖς θηραταῖς ἐπὶ τῆς γῆς οἱ  
 ἱέρακες, Pliny *NH* 18.363 *ardea in mediis harenis tristis*, Lucan 5.553 f.  
*quodque ausa volare | ardea sublimis pinnae confisa natanti*.

**18.124 ἐπὶ θάλατταν]** For direction of flight as an omen, cf. Diony-  
 sios *De Aucupio* 2.9 (previous lemma).

## 19

**19.126 σπίνος]** A finch or some other sparrow-like bird; see below, 39.281. Since a very common type of finch in present-day Athens is still called σπίνος, Thompson *GGB* 266 s.v. σπίζα equates the two, identifying the ancient bird of this name as the chaffinch, *fringilla coelebs*. He is followed by Dunbar on Aristoph. *Aves* 1079. For this bird as a weather sign, cf. Arat. 1024 (below, 39.281 f.), Ael. *NA* 4.60 σπῖνοι δὲ ἄρα σοφώτεροι καὶ ἀνθρώπων τὸ μέλλον προεγνώκεναι. ἴσασι γοῦν καὶ χειμῶνα μέλλοντα, καὶ χιόνα ἐσομένην προμηθέστατα ἐφυλάξαντο. καὶ τοῦ καταληφθῆναι δέει, ἀποδιδράσκουσιν ἐς τὰ ἁλσώδη χωρία, καὶ αὐτοῖς τὰ δάση κρησφύγετα ὥς ἂν εἴποις ἐστίν.

Furlanus' attempt to make sense of the codd. fails, since herons are not associated with houses (to say nothing of the unexampled use of the mere adjective standing for an understood ἔρωδιός, despite Arist. *HA* 609b22 πελλός ἐ., which Furlanus cites). Schneider's conjecture is the most likely, as the chirping of the finch is cited similarly elsewhere in *DS* as a weather sign: 23 σπίνος φθεγγόμενος ἔωθεν.

**19.126 οἰκίῃ οἰκουμένη]** There is no special emphasis on the house being inhabited; the thought is rather: If a chaffinch flies into your house. For this expression, cf. Menander fr. 846 K-A ἄνευ κακῶν γὰρ οἰκίαν οἰκουμένην | οὐκ ἔστιν εὐρεῖν. Bart. translates *in domo habitans*, but he probably took the second word (which he would have found without subscript) as a nominative.

**19.127 χύτρα]** The humble ceramic cooking vessel which Sokrates mentions in order to test Hippias' definition of beauty (*Hi. Ma.* 288). Wood worries unnecessarily, (i) that the contents of the pot are not given, but this is probably irrelevant and if it weren't ὕδατος could easily be taken ἀπὸ κοινοῦ; and, second, that it is not specified that the pot when sparking is placed over a fire, although this is all that *chytrai* are used for. The pot Sokrates describes contains ca. 5 gallons. See further B. A. Sparkes (well named in this context) and L. Talcott, *The Athenian Agora*, vol. 12, *Black and Plain Pottery* (Princeton 1970) 224-226 (with plates).

**19.127 σπινθηρίζουσα]** For this verb LSJ try to maintain an overly nice distinction between “emit sparks” and “cause the emission of sparks.” The real question is what conditions would produce the effect described here. Elsewhere in Greek meteorological theory, sparks are thought of as broken-off bits of bright material; e.g., Anaxag. 59 A 82 (shooting stars are like sparks [σπινθήρων δίκην] carried off from the aither), Metrodoros of Chios 70 A 14 (shooting stars occur when τὴν εἰς τὰ νέφη τοῦ ἡλίου βίαιον ἔμπτωσιν πολλάκις σπινθηρίζειν), schol. in Aristoph. *Pacem* 839 οἱ καόμενοι· οἱ σπινθηρίζοντες, οἱ καλούμενοι διὰ ττοντες, ἐν τῷ λάμπειν τοὺς σπινθήρας πέμποντες.

**19.127 πᾶσα]** We follow Wood in taking this with the preceding word; Hort takes it with what follows, although *περίπλεως* by itself means very full (not that pleonasm is unheard of in texts of all sorts).

**19.128 ἱουλοι]** A “centipede” (Wood) or, more likely, “millepede” (Hort), as the word indicates something that looks like a piece of wool; see J. Scarborough, “Nicander’s toxicology II,” *Pharmacy in Hist.* 21 (1979) 18; *ibid.* “Nicander *Theriaca* 811: A note,” *CP* 75 (1980) 138-140; I. C. Beavis, *Insects and other Invertebrates in Classical Antiquity* (Exeter 1988) 13 f. Aratos 959 f. imitates this passage: ἀθρόοι ὥφθεν ἱουλοι | τείχε' ἀνέπτοντες (as a sign of rain). Schol. MA ad loc. describes the animal: ὁ δὲ ἱουλός ἐστι σκώληξ μυρίοις ποσὶ χρώμενος. ὅμοιος ταῖς σκολοπένδραις (millepedes, taken together with ἱουλοι by Arist. *HA* 523b18), ἄλλοι δὲ τὸν σκώληκα τὸν μυρίοις ποσὶ χρώμενον. Cf. schol. ad Ap.Rh. 1.972 (= Th. fr. 374), where Theophrastos is cited for having called the *ioulos* an ὄνος; see also Sharples' n. ad fr. 374.

**19.129 δελφίς]** The dolphin as a weather sign: Pliny *NH* 18.361 *delphini tranquillo mari lascivientes flatum ex qua veniant parte, item spargentes aquam iidem turbato tranquillitatem*, Cic. *De Div.* 2.70, Artemid. 1.16 (p. 110 Hercher), Lucan 5.552 *incertus qui provocat aequora delphin*.

## 20

**20.131-2 Ὕμηττος ὁ ἐλάττων ... ὁ μέγας]** Mt. Hymettos, as the term is normally used, actually comprises two peaks, a higher one at 1027 m above sea level, and a lower one separated from it by a valley (κοίλω) at 774 m.

**20.131 ἄνυδρος]** An area is usually so called because it is without (much) groundwater (e.g., Hes. fr. 128 Ἄργος ἄνυδρον), but here the name may have arisen because prevailing winds might cause rains to drop on the far side of the higher peak, leaving the smaller peak comparatively free of rainfall.

**20.131 (ἐν) τῷ κοίλῳ]** Hort's conjecture is very likely, even without Bart.'s *in concavitate*. See above, 3.17, on weather signs found in heights and valleys.

**20.132 νεφέλιον]** That clouds do in fact carry (and hence portend) rain is well known: In Aristophanes' *Clouds* they introduce themselves as παρθένοι ὀμβροφόροι (298), and Strepsiades quotes an anonymous poetic tag, ὄμβρους θ' ὕδατων δροσερᾶν νεφελᾶν (338). To make this all the more explicit, Sokrates employs a rational argument (μεγάλοις σημείοις) to prove scientifically that it is clouds and not Zeus who (are the source of) rain: ποῦ γὰρ πώποτ' ἄνευ νεφελῶν ὕοντ' ἤδη τεθέασαι; | καίτοι χρηὴν αἰθρίας ὕειν αὐτόν [sc. τὸν Δία], ταῦτας δ' ἀποδημεῖν (370 f.). As is implicit in this argument, clouds are a necessary but not sufficient condition for rain, so that we still need to know *which* clouds are signs of rain. In this place, the diminutive sense of the word seems pertinent: "small cloud."

**20.135 ἰσημερίαν]** *Probl.* 26.26 (see just above) assumes that Lips blowing at either equinox produces rain, which is consistent with the language of *DS*.

**20.135 λίψ]** A rare instance in *DS* of a wind being used as a weather sign. The west-south-west wind; cf. below, 36.257-262; Arist. *Mete.* 364b18, 25, where Lips is said to be moist and airy (i.e., not dense); Th. *Winds* 51 (= Adesp. Eleg. 7 West<sup>2</sup>) quotes the first line of an elegiac couplet on this wind's effect on weather: λίψ ἄνεμος ταχὺ μὲν νεφέλας, ταχὺ δ' αἶθρια ποιεῖ. (For the second line, see below on 35 ἀργέστης) [Arist.] *Probl.* 26.26 (942b25 f.) asks (and then answers) the question, διὰ τί, ἐάν περὶ ἰσημερίαν λίψ πνεύση, ὕδωρ γίνεται;

## 21

**21.136 βρονταί]** Mention of thunder and lightning right after that of clouds is appropriate, for all are obvious signs of rain; cf. Aristoph. *Clouds* 265 Νεφέλαι βροντησικέραυνοι. Arist. discusses thunder and lightning in *Mete.* 2.9-3.1.

**21.136 μᾶλλον ὕδωρ]** For thunder and lightning as weather signs, cf. Pliny *NH* 18.354, where varying amounts of thunder and/or lightning are read to predict varying amounts of wind and/or rain — a passage that led Furlanus to insert (ἄνεμον ἢ) before ὕδωρ, but the next sentence (as we read it from V) supports a simple μᾶλλον ὕδωρ.

**21.138 ἀστραπαί]** These are the flashes of lightning, overlapping in ordinary thought with thunder bolts, κεραυνοί; cf., e.g., Aisch. *Th.* 430 (a description of a shield device) τὰς δ' ἀστραπάς τε καὶ κεραυνίους βολάς, where the artist could not have distinguished flash from bolt. [Arist.] *De Mundo* 395a21-23 explains: τὸ δὲ ἀστράψαν ἀναπυρωθέν, βιαίως ἄχρι τῆς γῆς διεκθέον, κεραυνὸς καλεῖται.

**21.138 γε]** This is unlikely to be right, as γε is not used elsewhere in *DS*, and in any case ἐάν γε makes no sense here (Denniston 126). τε, with which γε is often confused, although an improvement in sense, is almost equally alien to this work's style, but does appear just below at 22 ἐάν τε πολλά.

**21.138 πανταχόθεν]** This one word is spelled out by Aratos 933-936 into all the major winds/directions with the addition of the vivid picture of a sailor being surrounded on all sides by these threats of storm:

αὐτὰρ ὅτ' ἐξ εὐροιο καὶ ἐκ νότου ἀστράπτῃσιν,  
 ἄλλοτε δ' ἐκ ζεφύροιο καὶ ἄλλοτε πὰρ βορέαο,  
 δὴ τότε τις πελάγει ἔνι δεΐδιε ναυτίλος ἀνὴρ,  
 μή μιν τῇ μὲν ἔχῃ πέλαγος τῇ δ' ἐκ Διὸς ὕδωρ.

**21.139 ἦ]** The ἄν read by many mss. would suggest a mixed condition where the optative is unexpressed, which is possible but not as likely as simple dittography after ἀνέμου.

**21.140 ἀκρωρείας]** “At the beginning of dawn”; see above, on 2.11 ἀκρόνυχτοι. Here and again at 42.306; elsewhere only in late Greek literature: Georg. Mon. *Chronicon Breve* 110.416, where, owing to iota-cism, it is spelled -ίας, which is how Schneider (followed by Wimmer) printed it in order to distinguish it from its homonym with the sense “mountain heights.” The lexika should accordingly replace ἀκρωρία with ἀκρωρεία (B). Bart. translated *in vertice montis*, but few weather signs depend upon one’s being on a mountaintop (however much this location gives a broader view of weather conditions generally; cf. above, c. 4), whereas the time of day is often a factor. “Woher ἀκρωρία [*sic*] stammt, weiss ich nicht,” Kaibel *Hermes* 29 (1894) 103, who thought the word ill constructed, since ὥρα does not = “day.” But since the period of daylight was often thought of as (δῶδεκα) ὥραι (LSJ II 2 b), the word is not so objectionable as Kaibel thinks.

**21.140 νότου ... νοτόθεν]** Stylistically clumsy, but necessary for clarity’s sake. On the signs given by the different winds, cf. Arat. 933 f. (quoted above, on 21.138), Varro Reat. ap. Isid. *DNR* 38.2 *item Varro dicit signum esse tempestatis dum de parte aquilonis fulget et dum de parte euri intonat*, Verg. *G.* 370-373

*at Boreae de parte trucis cum fulminat et cum  
 Eurique Zephyrique tonat domus, omnia plenis  
 rura natant fossis atque omnis navita ponto  
 umida vela legit.*

*Geop.* 1.3.3 ἐὰν δέ ποτε μὲν ἐκ νότου, ποτὲ δὲ ἐκ βορέου ἢ εὐρου ἀστραπαὶ φέρωνται, προορατέον ὅτι ἐκεῖθεν μὲν ὄμβρος, ἔνθεν δὲ ἄνεμος ἐπενεχθήσεται. *DS* and Aratos keep all four directions; Varro (as quoted) has only north and east, Vergil drops the south, and the *Geoponica* drops the west.

**21.141 ξέφυρος ... πρὸς βορείου]** We take this phrase to mean “northwest” (although the more precise “westnorthwest” may be meant). This is admittedly odd, but less so than “when the west wind is accompanied by lightning from the north” (Hort), which is certainly a possible observation but not one that would drive a storm toward the observer. Arist. *Pol.* 1290a18 f. says that aristocracy goes with oligarchy the way Zephyros goes with Boreas; i.e., Zephyros is more of a northern than a southern wind.

**21.141 ἄνωθεν]** Perhaps “*from on high*” (LSJ I 1), with which cf. Thuc. 4.75 ὕδατος ἄνωθεν γενομένου, but as in this case the adverb is unnecessary, simply “on high” (ibid. I 2) may be what is meant; i.e., a reference to cloud-to-cloud lightning that does not reach the ground. (Furlanus and some subsequent editors omit this adverb without comment.)

**21.144 ἀστραπαί]** “Ad verba βορρᾶθεν ἀστράπτων deest aut nomen venti aut Ζεύς” (Schneider). Conceivably, however, the wind, namely βορέας, was once written before βορρᾶθεν, where some few letters (2-3) were erased in M (and where a somewhat larger space was left in mss. SQ). Cf. above, νότου ... νοτόθεν. Bart.’s *coruscationes* led Schneider to alter to ἀστραπαί.

## 22

**22.145 Εὐβοία ... μέση]** Below, 34.244, this same adjective is applied to Mt. Athos and other mountains, meaning “half-way up” (not “half-way down,” which would not allow for the girdle metaphor). Here, as Wood suggests, “Euboeia” stands in for its several mountains (e.g., Dirphys, Olympos, Ocha); see M. Cary, *The Geographic Background of Greek & Roman History* (Oxford 1949) 73-75.

**22.145 διαξωσθῇ]** This verb is often applied to geological features; note esp. Xen. *Mem.* 3.5.25 (Attica) μέση διέξωσται ὄρεσιν ἐρύμνοις. Aratos probably wrote v. 940 (given below) having just read a passage in Eudoxos very similar to this one. For a similar phrase, cf. 34.244. The reading of the codd., διαχωθῇ, “block up,” is certainly wrong.

**22.145 διὰ ταχέων]** The phrase is relative: At Pl. *Apol.* 32d it equals eight months.

**22.146 Πήλιον]** In southern Magnesia; height 1635 m.

**22.147 ἴρις]** Rainbows are among the most notable of signs of rain, wind, and storm; in our sources as early as Homer; cf. *Il.* 17.547-549 ἥ ὅτε πορφυρέην Ἴριν θνητοῖσι τανύσση | Ζεὺς ἐξ οὐρανόθεν, τέρας ἔμμεναι ἢ πολέμοιο | ἢ καὶ χειμῶνος δυσθαπέος, 12.26-28, Schol. ad. *Il.* 23.199 ἢ ἴρις φανεῖσα πολλάκις ἀνέμων κίνησιν δηλοῖ, Tzetz. *Alleg. Hom.* 15.82 ἴρις δ' ἐκ πελάγους ἄνεμον φέρει ἢ μέγαν ὄμβρον; Gilbert 605 ff., 11.27 f., 15.82. It is interesting to note that even when the goddess Iris moves from one place to another over water in Homer, she is accompanied by agitated seas; cf. *Il.* 24.77-79, 95 f. Note too Emped. 31 B 50 (= 44 Wr. = 57 Inw.) ἴρις δ' ἐκ πελάγους ἄνεμον φέρει ἢ μέγαν ὄμβρον. See Gilbert 605 ff. The Souda records an unusual refinement: τῆς ἱριδος ... τὸ πυρρὸν πνευμάτων [sc. σημαντικόν]; τὸ δὲ μελανίζον ὑδάτων. Note that in Anaxagoras 59 B 21 the words χειμῶνος ... σύμβολον applied to the rainbow have been taken away from Anaxagoras by O. Jöhrens, approb. F. Solmsen, and restored to the scholiast quoting him (approb. Erbse); see Sider ad loc. Since rainbows can appear when moisture is present in the air, they may just as well occur after as before rain showers. The Swiss sources in Hauser *Bauernregeln* 489-491 similarly are of two minds; e.g. “Argt la seira bel’ora veira” along with “Argt la sera fa lera.” Pliny *NH* 2.150 denies that rainbows have predictive value (but that was before he compiled the weather signs of book 18).

**22.147 ἐπισημαίνει]** All editors and translators understand “rain” to be the understood object, but as Lehoux *Parapegmata* 130-137 shows, this verb often appears without an object in weather literature. He argues that it thus means only “There is a change in the weather,” but it still seems that in this context it is permissible to understand what specific change is meant. See above, on 10.66. Note how elliptical this paragraph is.

**22.147-8 πολλαὶ ἱριδες]** Two rainbows can appear at the same time, the second one a paler reflection of the primary one, tracing a larger concentric circle and with its colors in reverse order; but no more than two (οὐδὲ δυοῖν πλείους ἱριδες γίνονται ἅμα, Arist. *Mete.* 371b32 f.; cf.



375b12-15). On rainbows in general see further Arist. *Mete.* 375a30–b15, Gilbert 610. The second-order rainbow occurs when the sun hits water droplets at a 52° angle from the eye to the direction of the sun so that a beam of light is reflected four times within a droplet before being directed to the eye. A fifth reflection is possible, but this would put the third-order rainbow back in the direction of the sun where its inherent faintness would be all but overwhelmed by the brightness of the sun; see Greenler 5-7 with figs. 1-3. Since *DS* says “many” rather than “two,” he must mean (ignoring second-order rainbows) that one appears soon after another, which could happen when the sun is frequently cut off by clouds. On the other hand, note Aratos 940 f., Pliny *NH* 18.353 *arcus cum sunt duplices, pluvias nuntiant; a pluviis serenitatem non perinde certam*, which could be used to argue that πολλαί is an error (*multae*, Bart.). Cf. further Arat. 940 ἡ διδύμη ἔξωσε διὰ μέγαν οὐρανὸν ἱρίς, Verg. *G.* 1.380 f. *et bibit ingens | arcus*, *Geop.* 1.3.5 ἱρίς δὲ διπλὴ φανεῖσα ὄμβρους δηλοῖ, Anon. Laur. 9 ἱρίς ἡγουν τόξον διπλοῦν φανέν ἐν τῷ οὐρανῷ ὄμβρους δηλοῖ.

**22.148 ἐπὶ πολὺ]** This cannot be one of *DS*’s many terms to indicate likelihood (see above, on 7.46 f. ὥς ἐπὶ τὸ πολὺ); more likely it means “for/over a long time”; cf. Thuc. 5.16.2, Λακεδαιμονίοις ἐπὶ πολὺ τάδε θεωροῖς ἀφικνουμένοις, 7.38.1 τῆς δὲ ἡμέρας ἐπὶ πολὺ προσπλέοντες.

**22.149 ὀξεῖς]** Neither “suddenly” (Hort) nor “burning” (Wood); rather the emphasis is on the brightness of the sun breaking through the clouds (which admittedly may be sudden, but after a rain is not particularly burning); cf. *Il.* 14.345 ὀξύτατον πέλεται φάος εἰσοράασθαι. That the sharpness is relative is shown by *Probl.* 14.13 (910a5-11) (asking why suffocating heat is experienced more in cold than in warm regions) ἡ οὐδὲ ἐστι ξηρότερος [ὕγρότερος Ross] ὁ ἀήρ ἐν τοῖς τόποις τοῖς τοιούτοις, ἀλλὰ φαίνεται παρὰ τὸ ἐναντίον, ὥσπερ ὁ ἐκ νεφέλης ἥλιος παρὰ τὸ ἐκ τῆς σκιᾶς θιγγάνεσθαι;

**22.149 νεφῶν]** This is the more common Peripatetic word of the two offered by the mss., and is further defended by the preceding plural ἥλιοι.

**22.149 μύρμηκες]** For this practice (which actually refers to pupae rather than eggs), cf. Arat. 956 f. μύρμηκες ὀχῆς ἔξ ὧρα πάντα | θᾶσσον ἀννέγκαντο, Varro *Atac.* fr. 22.7 Morel-Büchner *nec tenuis formica*

*cavis not evehit ova*, Verg. *G.* 1.379 f. *saepius et tectis penetralibus extulit ova* | *angustum formica terens iter*, Pliny *NH* 18.364 *formicae ... aut ova progerentes*. A. Platt, “Miscellanea,” *CQ* 5 (1911) 255 (adduced by Kidd) points out that “what the ants really carry out ... is their pupae, but these are commonly called ‘eggs’ to this day”; see also Davies-Kathirithamby 43.

Aelian also reports that ants, even though they remain underground, have the ability to know (Hes. *WD* 778 calls the ant ἵδρις) the day of the full moon (*NA* 1.22). And Plutarch *De Sollertia Animalium* 968a (who also refers to the weather sign involving ants’ pupae) reports that ants can detect when the grain they have stored is about to germinate under moist conditions (they then eat the germ to prevent germination).

**22.149 κοίλῳ]** The sense “low place” is determined from the following ὑψηλόν; cf. *Od.* 4.1 κοίλῃν Λακεδαιμόνα, since Sparta is hemmed in by mountains.

**22.151 παρήλιοι]** Suns alongside the sun: i.e., “mock suns” (or “sun dogs”) caused when suspended flat hexagonal ice crystals, which tend to float with their flat surface horizontal, refract light 22° to either or both sides of the sun (north and/or south) at either sunrise or sunset; see Greenler 27, Arist. *Mete.* 372a10-21, Arat. 880-891:

σκέπτεο δ' ἢ ἀνιόντος ἢ αὐτίκα δυομένοιο 880  
 εἷ που οἱ νεφέων τὰ παρήλια κικλήσκονται  
 ἢ νότου ἢ ἐ βορῆος ἐρεύθεται ἢ ἐκάτερθε,  
 μηδ' οὕτω σκοπιὴν ταύτην ἀμενηνὰ φυλάσσειν.  
 οὐ γάρ, ὅτ' ἀμφοτέρωθεν ὁμοῦ περὶ μέσσον ἔχωσιν  
 ἡέλιον κεῖναι νεφέλαι σχεδὸν ὠκεανοῖο, 885  
 γίνεται ἀμβολίῃ Διόθεν χειμῶνος ἰόντος·  
 εἷ γε μὲν ἐκ βορέας μί' οἷη φοινίσσοιτο,  
 ἐκ βορέω πνοιᾶς κε φέροι, νοτίῃ δὲ νότοιο,  
 ἢ καὶ που ῥαθάμιγγες ἐπιτροχόωσ' ὑετοῖο.  
 ἔσπερίοις καὶ μᾶλλον ἐπίτρεπε σήμασι τούτοις· 890  
 ἔσπερόθεν γὰρ ὁμῶς σημαίνετον ἔμμενές αἰεὶ.

Poseidonios fr. 121 E-K and Ptolemy *Tetr.* 2.14.2 call them νέφη. See further Gilbert 617 f. and below, 29.204. Anaxagoras deserves credit for recognizing that their origin is similar to that of rainbows: παραπλησίως δὲ (sc. τῇ ἴριδι) αἰτιολογεῖται τὰ καλούμενα παρήλια (Aët. 3.5.11 = Anaxag. 59 A 86, where his explanation of s may be found).

**22.152 ἄλως]** Arist. *Mete.* 372b22, and on halos in general, *Mete.* 3.2. Aristotle's nom. plural is ἄλω, but Demosth. 42.6 uses ἄλως also. Arist. loc. cit. 372b16-34 regards halos as a weather sign, and it is instructive to compare his attempts always to understand why this is so with the more sterile statements in *DS*: γίνεται μὲν οὖν ἡ ἀνάκλασις τῆς ὀψεως συνισταμένου τοῦ ἀέρος καὶ τῆς ἀτμίδος εἰς νέφος, ἐὰν ὁμαλῆς καὶ μικρομερῆς συνισταμένη τύχη. διὸ καὶ σημεῖον ἡ μὲν σύστασις ὕδατός ἐστιν, αἱ μὲντοι διασπάσεις ἢ μαράνσεις, αὗται μὲν εὐδιῶν, αἱ δὲ διασπάσεις πνευμάτων. ἐὰν μὲν γὰρ μήτε καταμαρανθῇ μήτε διασπασθῇ, ἀλλ' ἐαθῇ τὴν φύσιν ἀπολαμβάνειν τὴν αὐτῆς, ὕδατος εἰκότως σημεῖόν ἐστι, δηλοῖ γὰρ ἤδη γίνεσθαι τοιαύτην τὴν σύστασιν, ἐξ ἧς τὸ συνεχὲς λαμβανούσης τῆς πυκνώσεως ἀναγκαῖον εἰς ὕδωρ ἐλθεῖν. διὸ καὶ μέλαιναι γίνονται τὴν χροάν αὗται μάλιστα τῶν ἄλλων. ὅταν δὲ διασπαθῇ, πνεύματος σημεῖον. ἡ γὰρ διαίρεσις ὑπὸ πνεύματος γέγονεν ἤδη μὲν ὄντος, οὕτω δὲ παρόντος. σημεῖον δὲ τούτου διότι ἐντεῦθεν γίνεται ὁ ἄνεμος, ὅθεν ἂν ἡ κυρία γίγνηται διάσπασις ἀπομαραινόμενη δὲ εὐδίας· εἰ γὰρ μὴ ἔχει πως οὕτως ὁ ἀῆρ ὥστε κρατεῖν τοῦ ἐναπολαμβανομένου θερμοῦ μηδ' ἔρχεσθαι εἰς πύκνωσιν ὕδατώδη, δηλὸν ὡς οὕτω ἡ ἀτμὶς ἀποκέκριται τῆς ἀναθυμιάσεως τῆς ξηρᾶς καὶ πυρώδους· τοῦτο δὲ εὐδίας αἴτιον. ("The reflection of our vision takes place when the air and vapor are condensed into cloud, if the condensation is uniform and its constituent particles small. This formation is therefore a sign of rain, while if it is broken it is a sign of wind; if it fades, of fine weather. For if it neither fades nor breaks, but is allowed to reach its full development, it is reasonable to regard it as a sign of rain, since it shows that a condensation is taking place of the kind, which, if the condensing process continues, will necessarily lead to rain. And for this reason these halos are the darkest of all in color. But when it is broken it is a sign of wind; for its break up is due to a wind that is already in being but has not yet arrived. An indication that this is so is that the wind springs from the quarter in which the main break occurs. When it fades it is a sign of fine weather. For if the air is not yet in a state to overcome the heat contained in it and to develop into a watery condensation, it is clear that the vapor has not yet separated from the dry and fiery exhalation which causes fine weather.") On halos, see Gilbert 600-604, Greenler 22-26, Taub *Ancient Meteorology* 97, and below, 31.219, 51.372.

**22.152 ἄμα]** A halo is seen when ice crystals of varying shapes reflect (with some refraction) the sun in a circle at 22° from a line from the eye to the sun. But when the flat crystals that produce a mock sun begin to predominate the halo will shine brighter at the same height as the sun to the north and south (as described above), so that mock suns seem superimposed on the halo. See Greenler, pl. 2-3.

**22.153 μέλαινα]** As Arist. *Mete.* 372b24 f. says, when the air is thick with water (and hence a sign of rain), the halo appears black, or at any rate, darker than the air around it; see V. J. Bruno, *Form and Color in Greek Painting* (NY 1977) 83-85 (building on earlier work by Platnauer).

## 23

**23.155-6 Ὅνοι ... Φάτνη]** This condition is repeated at 43.319 f.; its converse is given at 51.370. Aratos 892-908 discusses the Manger and Asses as weather signs; note esp. 903 f. εἰ δὲ μελαίνηται, τοὶ δ' αὐτίκα ἐοικότες ὧσιν | ἀστέρες ἀμφοτέροι, περὶ χ' ὕδατι σημαίνειν, Theokr. 22.21 ἐκ δ' Ἄρκτοι τ' ἐφάνησαν Ὅνων τ' ἀνὰ μέσσον ἀμαυρὴ | Φάτνη, σημαίνουσα τὰ πρὸς πλὸν εὐδία πάντα, Pliny *NH* 18.353 *sunt in signo Cancrī duae stellae parvae Aselli appellatae, exiguum inter illas spatium obtinente nubecula, quam Praesepeia appellant; haec cum caelo sereno apparere desiit, atrox hiems sequitur; si vero alteram earum aquiloniam caligo abstulit, auster saevit, si austrinam, aquilo*, Ptol. *Tetrab.* 2.102, Nonnos 1.459. Note also that *P.Vind.* gr. 1, a collection of weather signs, contains a title [τὰ ἐκ τοῦ Φατνίου σημεία, below which all that can be read is [τὸ νε]φέλιον τὸ ἐν [τοῖς ὄν]οις (fr. 1, col. 1.18 f.); for the text (originally published by Wessely) see O. Neugebauer, “Über griechische Wetterzeichen und Schattentafeln,” *Sitzungsb. d. Österr. Akademie d. Wissensch., phil.-hist. Kl.* 240 (1962) 29-39; see also G. Arrighetti, “Problemi di letteratura meteorologica greca,” *Maia* 15 (1963) 411 f. In addition to Kidd on Aratos, see Gow and Sens on Theokr. ad loc. (A. Sens, *Theocritus: Dioscuri (Idyll 22)* [Göttingen 1997].) And on the varying brightness of fixed stars in general as weather signs, see Böker 1631-33, F. Boll, “Fixsterne,” *RE* 6 (1909) 2429.

**23.155-6 τὸ μεταξὺ τὸ νεφέλιον]** The grammar is correct but unexpected. Perhaps τὸ μεταξὺ is an intrusive gloss.

**23.156 τοῦτο]** Sc. τὸ νεφέλιον. As the Pliny and Aratos passages (previous lemma) make clear, the reference here is only to the nebula, the Asses remaining clear.

**23.157 ἐπὶ Ἀρκτούρου]** Although both the heliacal rising of Arktouros in September and its cosmical setting in March were regularly (with or without the presence of rain just then) taken as signs of stormy weather (*vehemens sum exoriens, quom occido vehementior* says Arcturus himself in Plautus *Rudens* 71), the phrase “at (the time of) Arcturus” (whether with ἐπὶ or περί; see Kidd on Aratos 745) refers only to the September rising, ca. 12 days before the fall equinox. Cf. Aratos 744-747

καὶ μὲν τις καὶ νηὶ πολυκλύστου χειμῶνος  
ἐφράσατ' ἢ δεινοῦ μεμνημένος Ἀρκτούροιο  
ἦέ τεων ἄλλων, οἳ τ' ὠκεανοῦ ἄρύνονται  
ἀστέρες ἀμφιλύκης, οἳ τε πρώτης ἔτι νυκτός.

**23.157-8 ἐὰν μὴ—ἢ ἄνεμος]** One of the few statements in *DS* that reads like an entry in a *parapegma*; see further below, on 30.206 ἢ πέμπτη κτλ.

**23.158 δημόσιον ... λεγόμενον]** Although no parallel can now be found among the collected Greek proverbs.

**23.159 μυίας]** Cf. Aratos 975 δάκνωσιν μυῖαι, *Geop.* 1.39, Anon. Laur. 11.48. Hence μυας, the reading of the M tradition, has to be understood as an example of monophthongization (μύας), which begins in the classical period (most notably in υἱός) rather than as a lexical variant “mice” (μῦας); on the phonology, see Threatte, *Grammar of Attic Inscriptions* 1.338-344. Moreover, mice in Greek seem always, even when explicitly female, to be modified with masculine articles, adjectives, etc. (see LSJ s.v. μῦς), and then the likelihood of flies biting seems more in line with the other signs given, whereas biting mice must have been rather a rare occurrence.

**23.160 σπίνος]** Essentially a repetition from 19.126.

## 24

**24.162 τῆς δὲ νυκτός]** The reading of most mss., τῆσδε τῆς ν., could stand if we thought that this sentence had been crudely transcribed from another context. But it should also be noted that the simple article before “night” is also odd, a mere νυκτός (or νύκτωρ) usually sufficing for the sense “at night.”

**24.162 τὸν Ὑμηττον]** Mt. Hymettos, to the south-east of Athens, is visible from much of the ancient city.

**24.163-4 μετρίων ἡμερῶν]** “A few days” (Wood and Hort); see above on 17.117 μέτριοι.

**24.164 τοῦ Διὸς τοῦ Ἑλλανίου]** Note that no word for temple area, mountain, altar, or building appears (although Hort translates “on the temple of Zeus”); cf. Pindar *Nem.* 5.10 f. (for Pytheas of Aigina) παρ βωμὸν πατέρος Ἑλλανίου στάντες, *Paian* 6. 125 f. (Aigina =) Διὸς Ἑλλανίου φαεννὸν ἄστρον. As Pausanias tells the story, Zeus received the epiklesis (Pan) Hellenios when Aiakos (Achilles’ grandfather) successfully prayed to him for rain over all of Greece (2.29.6). In 2.30.3 Pausanias locates the mountain of Zeus Panhellenios as that where the (still impressive) temple of Artemis Aphaia is located. See further H. Schwabel, “Zeus I. Epiklesen,” *RE* 10A (1972) 303; Jessen “Hellenios (I),” *ibid.* 8 (1912) 176 f.; A. B. Cook, *Zeus* 2.2 (Cambridge 1925) 894 f., 3 (1941) 1164 f. As Wood notes, this hilltop could be seen from the higher elevations in Athens (and still can on those days when pollution levels are low enough). J. Morton, *The Role of the Physical Environment in Anc. Gk. Seafaring* (Leiden 2001), 290 n. 9, reports that local fishermen told him they still believe a cloud over the peak of Aigina was a sign of rain.

**24.165-6 ἐὰν ὕδατα ... αὐχμηρόν]** *Probl.* 1.9 wonders why it is “That, if the winter is characterized by south winds and rainy and if the spring is dry with the wind in the north, both the spring and the summer are unhealthy,” but does not posit a causal link between rainy winters and dry springs.

**24.167 χιόνες πολλάί]** The sense (not recognized by LSJ) being “many snowfalls” although Hort’s “much snow” adequately conveys the sense. Cf. [Arist.] *De Mundo* 394a16 νέφη τε καὶ ὄμβροι καὶ χιόνες καὶ χάλασαι. Th. *CP* 2.1.2 explains why a lot of snow (χιόνος πλῆθος) is good for trees’ producing fruit the next season, but does not regard the snow as a weather sign.

## 25

**25.169 ἄνθρακι λαμπρῷ]** This conjecture “coal” (ἄνθραξι iam Schneider) is strongly indicated by Aratos 1041 f. ἄνθρακι δὲ ζῶοντι χαλάξης, ὅπποτε λαμπρὸς αὐτὸς εἰδῆται, i.e., “in live charcoal there are signs of hail, when the coal itself is seen to be bright” (Kidd). And for the dative λαμπρῷ rather than the nominative λαμπρά given by the mss., cf. Aratos loc. cit., Bart. *si in stella lucenti grando supervideatur*. The dative also tells us that the coals have been ignited; cf. Thuc. 4.100 ἄνθρακας ἡμμένους. The singular ἄνθρακι rather than Schneider’s plural seems marginally easier paleographically (an early majuscule misreading), as well as being supported by Aratos (which admittedly could just be a poetic sg. for pl.) and Bart. In general, prose usage calls for the plural, but cf. Th. *Sens.* 75 τὸν ἄνθρακα τῶν χλωρῶν ξύλων ἢ τῶν αὔων.

This and the next sign are read in domestic fires, a number of which signs are collected by Pliny *NH* 18.357 f. *Ab his terreni ignes proxime significant. pallidi namque murmurantesque tempestatum nuntii sentiuntur, pluviae etiam si in lucernis fungi, si flexuose volitet flamma. ventum nuntiant lumina cum ex sese flammās elidunt aut vix accenduntur; item cum in aeno pendente scintillae coacervantur, vel cum tollentibus ollas carbo adhaerescit, aut cum contextus ignis e se favillam discutit scintillamve emittit, vel cum cinis in foco concrevit et cum carbo vehementer perlucet.*

**25.169 χάλαξα]** For the various ancient theories concerning the way water freezes to form hail, see Gilbert 503-510; and cf. below, 36.257 f., 56.407-09, and Aratos 1041 f., quoted in the preceding lemma. Hail could be particularly destructive to crops. Th. *CP* 5.8.2-3 uses the words χαλαζοκοπία and χαλαζοκοπέω to describe its force. Even trees not killed off as a result of hail be open to disease later (Th. *HP* 4.14.1). On hail in general, see McCartney *CW* 28 (1938) 1-7.

**25.170 προσημαίνειν]** Conceivably the 3 sg. is what the author carelessly wrote, the subject being the action of the preceding clause, as often. This complex of the far more usual σημαίνειν occurs twice more in *DS*, at 31 and 52. Since the prefix adds nothing to the meaning (all weather signs are meant to give prior warning), it may be that all three instances were taken from a common source, which would have been a comprehensive one, since the three signs (“hail” seen in lamp, mountain, owl) and the three events (hail, wind, fair weather) have nothing in common.

**25.172-3 ἄμεινον ... ζώοις]** A statement of this sort, with the explanatory next sentence, belongs more to Th.’s scientific works on plants, where, e.g., he says that plants suffer less rot (rust) if they are exposed to wind (*HP* 8.10.2), and that plants can be destroyed by violent winds (3).

Or, closer to what we have here, see *CP* 2.1.5-3.3, where north wind and rain are said to be better than those from the south for many reasons, not one of them the reason given here. Similarly, Hipp. *Sacred Disease* 16 contrasts the salubrious north wind with the harmful effects of the south wind.

**25.172-3 ἄμεινον πρῶτον ... βόρειον ... νοτίου]** Literally, “north first is better than south (first),” which is clear enough, however awkward. Heeger 38 should not have thought about expelling πρῶτον.

**25.173 φυομένοις]** “growing things,” but in this context, clearly in the more particular sense “plants” (and so rendered by all translators), although LSJ give no hint that φυόμενα was used this way. This is, however, regular Aristotelian usage: *De Anim.* 543a25, *GA* 731a8, *HA* 543b24, etc.

**25.173 δέ]** = γάρ, as often; see W. Headlam, *On Editing Aeschylus* (London 1891) 119 f., M. L. West, *Textual Criticism and Editorial Technique* (Stuttgart 1973) 23; Denniston, *GP* 23; Sider, *Anaxagoras*<sup>2</sup> (Sankt Augustin 2005) 119 f.

**25.174 γενομένοις]** Although one ms. (S) has γενομένοις a.c., this same error in Furlanus’s Greek text (although he translates *gustantibus*, as did Bart.) was copied by Heinsius and Schneider, who then changed his mind and urged γενομένοις. Hence the erroneous statement in



Wimmer crediting Schneider with this “correction.” Rain from the south (in Greece) tastes of the sea, which could be bad for plants unaccustomed to salt build-up.

**25.174-5 τὸ ἔτος—κρεῖττον]** V’s Greek is straightforward; that of the other codd. is wretched, reading more like a marginal gloss that got mangled when inserted into the text. A “northern season” is one in which northern winds prevail. Usually the adjective in this sense (LSJ s.v. 2) is applied to individual seasons. Note in particular Hipp. *Aer.* 10, where the seasons and the year are examined ὁκοῖόν τι μέλλει ἔσεσθαι τὸ ἔτος, εἴτε νοσηρόν εἴτε ὑγιηρόν· ἦν μὲν γὰρ κατὰ λόγον γένηται τὰ σημεῖα ἐπὶ τοῖσι ἄστροισι δύνουσί τε καὶ ἐπιτέλλουσιν ... οὕτω τὸ ἔτος ὑγεινότατον εἰκὸς εἶναι. Note how here and elsewhere in Greek literature on weather lore, ἔτος is to be understood as “season” rather than, as all the lexika say, as “year.” And we should understand “seasons not only [as] the larger divisions of the year ... , but also [as] smaller divisions which might perhaps be called seasonal points; for instance the times of cherry blossoming and hop-picking are also seasons”; M. P. Nilsson, *Primitive Time Reckoning* [Lund 1920] 46; cf. also 51-54. As Nilsson points out later (86), these seasons, large and small, are older than the idea of the (solar) year. Outside of weather literature, note Theokr. 7.85 ἔτος ὥριον = the seasonable part of the year, i.e., “spring” (with Gow’s n. ad loc.) and Philetas fr. 3 Powell ἐκ Διὸς ὠραίων ἐρχομένων ἐτέων. Similarly, when Pliny *NH* 18.226 talks of the farmer’s ability to predict the *anni temperies*, which comes *alibi tardius alibi maturius*, he looks forward only to the next season; cf. Arruntius *Hist.* 5 *totus hiemavit annus*, and in general OLD s.v. *annus* 7, which recognizes this use in Latin. See further C. J. Emlyn-Jones, “ἔτος and ἐνιαυτός in Homeric formulae,” *Glotta* 45 (1967) 156-161; R. S. P. Beekes, *ibid.* 47 (1969) 138 ff.

**25.175 ὑγεινότερον]** On climate and health in *DS*, see on 54.397 νοσῶδες.

**25.175 ὁχεύωσι]** Schneider, followed by Wimmer, read the middle, which can refer to both male and female (cf. Hdt. 2.64.2), but our author may have been thinking only of the activity of the males: cf. Arist. *HA* 574a12-15 τῶν δὲ προβάτων ἐὰν μὲν τὰ πρεσβύτερα ὀρμᾷ πρὸς τὴν ὁχείαν κατὰ τὴν τεταγμένην ὥραν, φασὶν οἱ ποιμένες σημεῖον εὐετη-

ρίας εἶναι τοῖς προβάτοις, ἐὰν δὲ τὰ νεώτερα, κακοθηνεῖν τὰ πρόβατα, Ael. *NA* 7.8 ἀναβαινόμενα δὲ τὰ αὐτὰ [i.e., πρόβατα] πρωὶ πρώιον χειμῶνα ὁμολογεῖ. Schneider also inserted πάλιν before this word to provide some more sense (“when sheep or goats have a second breeding season,” Hort), and this or something like it may well have dropped out; perhaps <μᾶλλον> as in 39.280 χῆνες βοῶντες μᾶλλον. Cf. Aratos 1068-74

θήλειαι δὲ σύες, θήλεια δὲ μῆλα καὶ αἰγες  
 ὁππότ' ἀναστρωφῶσιν ὀχῆς, τὰ δὲ γ' ἄρσσει πάντα  
 δεξάμεναι πάλιν αὖτις ἀναβλήδην ὀχέωνται, 1070  
 αὐτῶς κε σφήκεσσι μέγαν χειμῶνα λέγοιεν.  
 ὁψὲ δὲ μισγομένων αἰγῶν μήλων τε συῶν τε  
 χαίρει ἄνολβος ἀνήρ, ὃ οἱ οὐ μάλα θαλπιῶντι  
 εὖδιον φαίνουσι βιβαιόμεναι ἐνιαυτόν.

Cf. *Geop.* 1.4.2 καὶ αἰγες καὶ οἶες ὀχευθεῖσαι, καὶ πάλιν ὀχεύεσθαι βουλόμεναι μακρότερον σημαίνουναι χειμῶνα; sim. Anon. Laur. 11.5 (ῥες for οἶες). Arist. *HA* 575b17-19 records that cows too were included in this sign: ὅταν δὲ πολλαὶ κύωσι καὶ προσδέχωνται τὴν ὀχείαν, σφόδρα δοκεῖ σημεῖον εἶναι καὶ χειμῶνος καὶ ἐπομβρίας. (And Ael. *NA* 7.8 says that when goats rush from their pens to their fodder it is a sign of rain.)

## 26

**26.178 ἀνέμων δέ]** καὶ πνευμάτων add. plerique, which mixes singular and plural. V's ἀνέμων seems preferable. Moreover, that the same hand in M wrote περὶ σημείων ἀνέμων in marg. suggests that ἀνέμων was in an ancestor of M. Th. *Winds* 36 Cortant and Eichenlaub associates winds with other meteorological observations, some of which occur beforehand (and hence, it is implicit, can be used as weather signs): κοινὰ δὲ καὶ τὰ τοιαῦτα πλειόνων, οἷον ἀστέρων τε καὶ <σελήνης> καὶ ἄλων καὶ παρηλίων φάσις καὶ ἀπομάρανσις ἢ ῥῆξις, καὶ εἴ τι τοιοῦθ' ἕτερον. πρότερον γὰρ ὁ ἀήρ ὁ ἄνω τῷ πάσχειν ἀποδηλοῖ τὴν τῶν πνευμάτων φύσιν.

**26.178 ἀνατέλλων ὁ ἥλιος]** Contrast Pliny *NH* 18.342 *purus oriens atque non fervens serenum diem nuntiat*. There was general recognition that the sun is a factor in the production of winds: ὁ δ' ἥλιος καὶ παύει καὶ συνεξορμᾷ τὰ πνεύματα (Arist. *Mete.* 361b24); see also *Probl.* 26.34

(944a25) διὰ τί αἰρομένου τοῦ ἡλίου καὶ αὐξάνεται καὶ πίπτει τὰ πνεύματα; Th. *Winds* 16-18.

**26.178 καί]** The καὶ of the other codd. would have to mean “even if,” which is contrary to the sense required here. A simple “and” is all that is required.

**26.179 κοῖλος]** This may be a reference to a corona close to the sun; and since coronas are formed from the diffraction through suspended water crystals this could indeed be a sign of upcoming rain (Greenler 140 f.) Note that the ancients did not distinguish, as modern science does (Greenler 139), between “corona” and “halo” (Lat. *corona* is expressly stated to be the translation of ἄλως by Seneca *NQ* 1.2.1: *hunc Graeci halo vocant, nos dicere coronam aptissime possumus*.) More likely, perhaps, the sun penetrating misty air illuminates the air immediately around its circumference, so that while the sun would appear dimmer the brighter circular cloud pattern can be taken as the ring of the sun itself. This is known as a “watery sun”; see Kahl 61 (with photo). This ring too would be called a halo by the Greeks. Cf. Schol. on Aratos 811 (a passage describing lunar halos) ὅταν τοίνυν περί τι ἄστρον νέφη συστῇ συνεχῇ καὶ κοῖλα, ἐνσταθῇ δὲ ὁ ἄηρ ἐπὶ ταῦτα, εἴτα ἀνάκλασιν σχῇ εἰς αὐτὸ τὸ ἄστρον, ἐμφαίνεται τοῦτο καθ’ ἐκάστην ἀνάκλασιν, καὶ οὕτως ἡ ἄλως ἀποτελεῖται. Here it is the cloud that is said to be hollow, but another observer of the same phenomenon could understandably attribute the hollowness to the sun. Cf. also Varro *Reat.* ap. Isid. *DNR* 38.4 *sol si exoriens concavus videtur, ita ut e medio fulgeat et radios faciat partim ad aquilonem, partim ad austrum, tempestatem humidam et vernosam futuram innuit*, Lucan 5.544 *orbe quoque exhaustus* [sc. *sol*] *medio languensque recessit*, Pliny *NH* 18.344 *si nubes solem circumcludent, quanto minus luminis relinquent tanto turbidior tempestas erit*. Since Aratos’ word is ἄλωαί, Gilbert 601 n. 2 thinks that he is here distinguishing between *diffuse Lichtkreise* and coronas and halos (*Lichtkränze oder Lichtringe ... in grösserer Entfernung*), but Kidd is no doubt correct to take this Greek word as simply an epicizing form of ἄλως. Cf. further Aratos 828 (weather will not be fair) ὅπποτε κοῖλος ἐειδόμενος περιτέλλῃ (sc. the sun), Ptol. *Tetr.* 2.14.2 ὡς ἐφ’ ἑαυτὸν κοιλούμενος, Verg. *G.* 1.442 *conditus in nubem medioque refugerit orbe*.

**26.181-2 ἀκτῖνες ... σχίζονται]** The Greek here, although inelegant, suggests crepuscular rays, which are often seen at dawn or evening radiating from the sun behind low-lying stratocumulus clouds, which are moisture laden and hence dark but also irregular enough to allow the sun to shine through in places, more often downwards than upwards; see Greenler 129-131; Kahl 65. In English these rays are said to “draw up water.” Stratocumulus clouds are not themselves turbulent (cf. Pliny, quoted below), but are often seen before and after storms. Cf. Aratos 829-31 (continuing the passage given just above; i.e., weather will not be fair)

οὐδ' ὁπότ' ἀκτίνων αἱ μὲν νότον αἱ δὲ βορῆα  
 σχιζόμεναι βάλλωσι, τὰ δ' αὖ περὶ μέσσα φαίνειν  
 ἀλλὰ που ἢ ὑετοῖο διέρχεται ἢ ἀνέμοιο.

Pliny *NH* 18.343 *si in exortu spargentur partim ad austrum partim ad aquilonem, pura circa eum serenitas sit licet, pluviām tamen ventosque significabunt*, Verg. *G.* 1.445 f. *aut ubi sub lucem densa inter nubila sese | diversi rumpent radii*, Lucan 5.541-543 *nam sol non ... | concordisque tulit radios: Noton altera Phoebi, | altera pars Borean diducta luce vocabat*, Anon. Laur. 2.6 ἐὰν ἀνίσχοντος τοῦ ἡλίου ἀκτῖνες πρὸς βορὰν ἢ πρὸς νότον ἀποτεινῶσι, τὰ τε περὶ τὸν ἥλιον καθαρὰ ἦ, ὕδωρ καὶ ἄνεμον προσδέχεσθαι χρή.

## 27

**27.184-5 ἡλίῳ ... ἐρυθρά]** This compendious phrase would seem to cover either body marked by either color. But are the *semeia* of the same sort? The fuller description in Aratos suggests that at times they are overall coloring and at other times red or black spots. Of the moon he says

πάντη γὰρ καθαρῇ κε μάλ' εὖδια τεκμήραιο,  
 πάντα δ' ἐρευθομένη δοκέειν ἀνέμοιο κελεύθους,  
 ἄλλοθι δ' ἄλλο μελαινομένη δοκέειν ὑετοῖο. (802-4)

And of the sun,

μή οἱ ποικίλλοιτο νέον βάλλοντος ἀρούρας  
 κύκλος, ὅτ' εὐδίου κεχρημένος ἥματος εἷης,  
 μηδὲ τι σῆμα φέροι, φαίνοιτο δὲ λιτὸς ἀπάντη. (822-5)

... .

σκέπτεο ...

εἴ τί που ἢ οἱ ἔρευθος ἐπιτρέχει, οἷά τε πολλὰ  
 ἐλκομένων νεφέων ἐρυθαίνεται ἄλλοθεν ἄλλα, 835  
 ἢ εἴ που μελανεῖ· καί τοι τὰ μὲν ὕδατος ἔστω  
 σήματα μέλλοντος, τὰ δ' ἐρυθρέα πάντ' ἀνέμοιο. (832-7)

Ptolemy *Tetrab.* 2.14, also for purposes of predicting the weather, distinguishes between clear, reddish, and mottled appearances of the sun and moon. The mottled appearance of the sun is not due to sunspots, which are not easily seen by the naked eye, but rather to the imposition of clouds dark enough to stand up to the powerful rays of the sun, at least at sunrise and sunset. Cf. Verg. *G.* 1.441 f. *ille* (sc. *sol*) *ubi nascentem maculis variaverit ortum | conditus in nubem*. We regard M's complicated sentence the *lectio difficilior*, which was simplified by V, whose σημαντικά probably arose as a marginal gloss. For this word, see below, on 30.210 σημειῶν.

**27.184-5 τὰ μὲν μέλανα ὕδατος, τὰ δ' ἐρυθρὰ πνεύματος]** Cf. Varro Reat. ap. Pliny *NH* 18.348 (of the moon alone) *si rutila, ventos; nigrescens imbres*.

**27.185 ἐὰν δὲ ὁ μῆν]** To judge from Fifth- and Fourth-century inscriptions, Attic used this form of the nominative rather than μείς (*IG* I<sup>3</sup> 402.14, 15, 17, 22; 403 Bb.65; II<sup>2</sup> 1369.24), and in the two senses found here, both “month” and “crescent(-shaped object).” Since, moreover, no other passage displays both μῆν and μείς, V's text seems preferable. Two minor problems remain, (i) what seems to be a μὲν solitarium and (ii) μείς = “month” in the next sentence, but both can be explained if we consider the ὅταν μὲν ... ὅταν δέ clauses as later insertions (quite possibly by the original compiler in a cut-and-paste mode, rather than by a later redactor), so that the ἐὰν μὲν clause looks forward to ἐὰν δέ, which was misunderstood by a later redactor, who altered the beginning of the sentence while at the same time altering μῆν to μείς. (Note that the second μῆν of this sentence was altered to μείς in cod. B.)

In general the shape of a crescent moon was assessed for its predictive value; cf. above, c. 12, and Aratos 778-798 σκέπτεο δὲ πρῶτον κεράων ἐκάτερθε σελήνην κτλ, McCartney, *CW* 22 (1928) 33 f. Points to be noted are whether the horns are blunted, what color the moon seems to be, and what whether the horns lean forward or incline backward, and on what day of the month these signs are sighted. On the particular observation made here about the uprightness of the crescent moon, note 790-793

ἀλλ' ὀρθαὶ ἐκάτερθε περιγνάμπωσι κεραῖαι,  
 ἐσπέριοι κ' ἄνεμοι κείνην μετὰ νύκτα φέροντο.  
 εἰ δ' αὖτως ὀρθὴ καὶ τέτρατον ἡμαρ ἀγινεῖ,  
 ἢ τ' ἂν χειμῶνος συναγειρομένοιο διδάσχοι.

There are, however, two significant points of differences between *DS* and Aratos. First, the former's positing a northern wind as one of the conditions is lacking in the latter (and unparalleled elsewhere); second, whereas *DS*, since it does not specify whether the crescent moon in question begins or ends the month, would seem willing to predict the stormy nature of the month from a sign that could occur at its beginning, Aratos on the other hand more cautiously specifies that σήματα δ' οὐ τοι πᾶσιν ἐπ' ἡμασι πάντα τέτυκται (805), but that "Those that occur on the third and fourth days are valid up to the half-moon," etc. (tr. Kidd). It would seem likely, therefore that *DS*'s βορείου ὄντος is an error for something like τρίτῳ φθίνοντος. (βορείου, sc. ἀνέμου, however, though unusual, can stand; cf. e.g. Xen. *Cyn.* 8.1, Arat. 795, 907.) Thus, *DS*'s prediction for the rest of the month can be thought more reasonable, and it is paralleled in Varro (see below). For some parallel predictions in English made from the position of the crescent moon, see Marriott 207 f.

**27.185 εἰστήκη]** This augmented subjunctive is slightly supported by IG I<sup>3</sup> 476.177 εἰστηκότα; see Threatte 2.501, who also adduces καθηστηκώς as a possible parallel, but the only literary parallels to turn up on the TLG disk are Jo. Chrys. *Adv. Iud.* 48.852, id. *Mut. Nom.* 51.145, but this may mean only that instances in earlier (and more "carefully") edited authors have been emended away.

**27.186 ζέφυροι εἰώθασιν ἐπιπνεῖν καὶ ὁ μὲν χειμερινὸς διατελεῖ]** This same pair, here both results, occurs as cause and result in Varro Reat. ap. Pliny *NH* 18.349 *si ante quartam non apparuerit* [sc. luna] *vento favonio flante, hiemalis toto mense erit.*

**27.187 κεραῖα]** <ἡ ἄνω> seems to be a reasonable insertion, given the corresponding δέ clause, but it is not really necessary; cf. Aratos 788 f. (immediately preceding the lines quoted in the last lemma) εἰ δέ κ' ἀπ' ἀμφοτέρων κεράων τρίτον ἡμαρ ἄγουσα | μήτ' ἐπινευστάξῃ μήθ' ὑπτίωσα φαείνῃ, where it is assumed that the leaning forward or back is that of the upper horn. On the other hand, just below, in a similar passage, Aratos specifies the upper horn (794 f. τὸ μετήρορον).

**27.188-9** ἐὰν δ' ὀρθός—διχομηνίας] Cf. Varro Reat. ap. Pliny *NH* 18.348 *si quarto die luna erit directa, magnam tempestatem in mari praesagiet, nisi si coronam circa se habebit et eam sinceram, quoniam illo modo non ante plenam lunam hiematurum ostendit.*

**27.188-9** μὴ καλῶς ἐγκεκλιμένος ... καὶ εὐκυκλος] This oddly phrased esthetic description seems to describe a crescent-shaped moon where the ends of the horns extend past a diameter. Cf. the slightly fuller description in Aratos 796 τριτόωσαν ὅλος περὶ κύκλος ἐλίσσει. Since, eclipses aside, the shapes formed by the illuminated moon are regular from month to month, the full or nearly full circle of the moon must, as Kidd ad loc. plausibly argues, refer to “earth shine,” “when the lunar crescent is slender” and “The outline of the dark part is faintly visible.” As Kidd also shows, the scholia to Aratos offer misguided interpretations. One, e.g., explains the phenomenon in question as if it were the lunar equivalent to a watery sun (see above), which perhaps could obtain during a full moon, not (and certainly not exclusively) on the third day of the lunar cycle.

## 28

**28.191** αἶθυιαι καὶ νῆτται] Contrast 18.120, a tame flapping duck under the eaves signals rain. αἶθυιαι are usually taken to be shearwaters of some sort, but Pliny’s translating this word as *mergi* (see below) allows for the possibility that they are rather to be taken as cormorants; see W. G. Arnott, “Notes on *gavia* and *mergi* in Latin authors,” *CQ* 14 (1964) 249-262, who, although noting that “nothing in ancient Greek literature about αἶθυια actually prevents its identification as a cormorant or shag” [a smaller variety of cormorant] (254), but is hesitant to do so, since Aristotle elsewhere calls the cormorant κόραξ. Shearwaters are great divers; cf. Apoll. Rh. 4.966, Aratos 296 κολυμβίσιν αἰθυίῃσι. For these two birds as sign of bad weather, cf. Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) νῆτται δὲ καὶ αἶθυιαι περυγίζουσαι πνεῦμα δηλοῦσιν ἰσχυρόν (= *CCAG* 8.1.138.16 = Anon. Laur. 11.35), Aratos 918 f. πολλάκι δ' ἀγριάδες νῆσσαι ἢ εἰναλίδιναι | αἶθυιαι χερσαῖα τινάσσονται περύγεσσιν, Verg. *G.* 1.361. Pliny offers another sign: *NH* 18.362 *mergi* (= αἶθυιαι, but see above) *anatesque pinnas rostro purgantes ventum*. Thompson *Gk. Birds* 27 allows the αἶθυια to represent a number of shearwater species, including *Puffinus yelkuan*, but see below, on κέφοι.

**28.193 κέπφοι]** A bird that has long defied exact identification, but generally agreed to be a petrel or shearwater of some sort, the precise identification of which is hindered by the fact that “The taxonomy of the *Puffinus* shearwaters is complex and is constantly changing as it becomes better understood”; O. J. Merne and P. Yésou, in W. J. M. Hagemeijer and M. J. Blair (eds.), *The EBCC Atlas of European Breeding Birds* (London 1997) 22. There are, however, two detailed color illustrations labeled as κέπφος in codex Vindob. med. gr. 1, most famous for its Dioskorides, but which also contains Dionysios *De Aucupio* (f. 480<sup>v</sup> for the illustrations, reproduced in black and white in Garzya’s Teubner ed., but for purposes of identification only the excellent color facsimile should be consulted). On the basis of a color illustration (see our frontispiece), along with the literary evidence (below), Elke Böhr, an art historian who has studied ancient representations of birds, and her husband Hans-Joachim, a forester and ornithologist, have kindly identified this bird for me as the Levantine shearwater, *Puffinus yelkouan*, a separate species of shearwater; note that until recently this bird was considered (and there are those who still would so consider) a subspecies, *Puffinus puffinus yelkouan*, of the Manx shearwater, *P. p. p.* See S. Cramp et al., *Handbook of the Birds of Europe, the Middle East, and North Africa: The Birds of the Western Palearctic*, 1 (Oxford 1977) 145, with pl. 15. (I thank Elke Böhr for much needed bibliographical guidance in the preparation of this note.) Earlier scholars (without, it seems, having seen the color illustrations in the Vienna codex) have identified this bird as the storm petrel (whose current scientific name is *hydrobates pelagicus*; previously *Thalasidroma pelagica*); so, e.g., Pollard *Birds* 196 n. 15, and Garzya (ad Dionysium; see below). But this bird “was first recorded in Greece in the 19th century” (G. Handrinos and T. Akriotis, *The Birds of Greece* [London 1997], and thus may not have been known in ancient times. Kidd ad Arat. 916 identifies the κέπφος as Cory’s Shearwater (*Calonectris diomedea*). Even ancient authorities were in doubt; cf. Hesychios s.v. κήξ· ὁ λάρος κατὰ Ἀπίωνα. λέγεται δὲ καὶ καύηξ. τινὲς καὶ αἴθυιαν ἀποδιδόασιν· οἱ δὲ κέπφον. οἱ δὲ διαφέρονται ἀλλήλων. (*Bart.* just gives up, omitting the clause altogether.) Thompson takes no stand on the bird’s identification other than to cast doubt on its being *Hydrobates pelagicus*; he further suggests that the word is of non-Greek origin and possibly taken over from Egyptian *k.bh.w*. Since the κέπφος, like the λάρος, was considered stupid (and men could be so called), Felix Solmsen, *IF* 30 (1912) 7 n.1 connected the word to Hesychios κεμπός (not in LSJ).



κοῦφος, ἐλαφρὸς ἄνθρωπος. (And note that these birds' habit of "shearing" the waves is described by Dionysios *De Aucupio* 2.11 as the κέπφοι's eating the wave's foam: αὐτὴν δὲ τὴν τῆς θαλάσσης ἄχνην ἐσθίουσι.)

For its role as a weather sign, cf. Schol. ad Arat. 916 ἐπειδὴν οὖν προαίσθηται ὀλίγου πνεύματος πνεῖν μέλλοντος, ἵπταται, οὐ φεύγων τὸν ἄνεμον, ἀλλ' αὐτοῦ τοῦ ἀνέμου ἀντιπρόσωπος, Dionysios *De Aucupio* 2.11 σημαίνει τοῖς ἀλιεῦσιν ἐπιτυχίαν, Aratos 916 f. (who follows *DS* closely) καὶ ποτε καὶ κέπφοι, ὁπότ' εὐδίοι ποτέωνται, | ἀντία μελλόντων ἀνέμων εἰληδὰ (= "in flocks," Kidd) φέρονται.

On the illustrations in the Vienna codex, see L. Brubaker, "The Vienna Dioskorides and Anicia Juliana," in A. Littlewood et al. (eds.), *Byzantine Garden Culture* (Washington 2002) 189-214.

**28.194 στρουθοί]** Sparrows are not generally taken as weather signs; indeed *DS* may be the sole authority (if that is the word); see below, 39.284.

**28.195 ἐρωδιός]** Taken to be a heron here, as often, although Thompson, from its occasional identification in lexica with λάρος and αἶθυια takes it as another word for gull (as well as for heron). Cf. Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) ἐρωδιὸς δὲ κνεφαῖος βοῶν τὰ αὐτὰ (sc. χειμῶνα ἰσχυρόν) ἔοικεν ὑποδηλοῦν . . . πετόμενος δὲ ἐρωδιὸς τῆς θαλάττης εὐθὺ ὕδωρ ἐξ οὐρανοῦ ῥαγήσεσθαι αἰνίττεται. As Cronin "Authorship" 309 notes, a number of weather signs in this fragment are not found in *DS*. Cf. also Aratos 913-915

καὶ δ' ἂν ἐπὶ ξηρὴν ὅτ' ἐρωδιὸς οὐ κατὰ κόσμον  
ἐξ ἁλὸς ἔρχεται φωνῇ περιπολλὰ λεληκώς,  
κινυμένου κε θάλασσαν ὕπερ φορέοιτ' ἀνέμοιο.

**28.196 καὶ ὄλως]** We take this to mean that a loudly squawking heron is a sign of wind, even it is not flying in from the sea.

## 29

**29.198 κύων]** In general, see Xen. *Cyneg.* 5.1-6, which discusses the effects that various seasons, winds, and rains have on scents, with which cf. also [Arist.] *Probl.* 26.22 (942b13) διὰ τί οἱ κύνες τὰ ἔχνη ἥκιστα εὐρίσκουσι ζεφύρου πνέοντος. Most pertinent here is *Cyneg.* 5.3 οἱ

ὄμβροι οἱ γιγνόμενοι διὰ χρόνου ὁσμάς ἄγοντες τὴν γῆν ποιοῦσι δύσσομον, which suggests that the dog is not so much rolling as getting close to the ground in order to perceive a scent there that will be soon lost in the wind.

**29.198 ἀνέμου μέγεθος]** In this sentence one might fairly infer that the extent of the rolling is correlated to that of the wind, but this same phrase at 30.214, where it is a yes-or-no situation, shows that for this author these words mean a “strong wind.”

**29.198-9 ἄμπωτις ... πλημμύρα]** There does not seem to have been much Peripatetic speculation on the nature of tides; cf. [Arist.] *De Mundo* 396a25-27 πολλάί τε ἀμπώτις λέγονται καὶ κυμάτων ἄρσεις συμπεριοδεύειν αἰετὶ τῇ σελήνῃ κατὰ τινὰς ὠρισμένους καιροὺς. And Aristotle himself (*Mete.* 366a18-21) likens the daily fluctuation of day- and night-time winds (the latter being calmer than the former) to the ebb and flow of tides, but this vague comparison in no way suggests a theory of tides. Later writers on the subject are Seleukos, Pytheas of Massilia, and (most notably in our sources) Poseidonios (F 214-220 Edelstein-Kidd). Th. *Meta.* 10a28 asks τίνος γὰρ ἔνεκα αἱ ἔφοδοι καὶ ἀνάρροισι θαλάττης, which seems to refer to tides; for a discussion see van Raalte *ad loc.* and Laks-Most *ad loc.* (p. 76 n. 7).

**29.199 ἀράχνια]** Cf. [Arist.] *Probl.* 26.61 (947a33) διὰ τί τὰ ἀράχνια τὰ πολλὰ ὅταν φέρηται, πνεύματός ἐστι σημεῖα; A seemingly obvious answer, that something as delicate as a spiderweb will move in winds too slight for humans to feel on their skin, is ignored in favor of other suggestions, the least unlikely being that air towards the ground contracts, which is a sign of storm. Cf. also Arat. 1033 (as a sign of storm) ὅτε νηνεμῖη κεν ἀράχνια λεπτὰ φέρηται, *Geop.* 1.3.9 ἀράχνια μὴ ὄντος ἀνέμου καταφερόμενα ... χειμῶνα ἐσόμενον δηλοῦσι ≈ Anon. Laur. 11.7, Pliny *NH* 11.84, where the mere presence of many spider webs are taken as a sign of rain; he also says, *ibid.*, that spiders’ weaving webs higher than usual signals rivers rising in flood and (8.103) can even foretell the collapse of a building. See further Beavis, *Insects* 40.

**29.200-01 θάλασσα οἰδοῦσα ... ἀνεμώδης]** The sea swells and makes noise that can be perceived either in midsea or along the shore as the waves break. Since there is both swelling and noise, one has to note

SNQ's αἰδοῦσα for οἰδοῦσα, but the morphology is unparalleled, a singing sea is altogether too poetical (more so than howling headlands; see next lemma), and in any case the many parallels in the weather literature guarantee the latter word. Cf. Aratos 909-912

σῆμα δέ τοι ἀνέμοιο καὶ οἰδαίνουσα θάλασσα  
γινέσθω καὶ μακρὸν ἔπ' αἰγιαλοὶ βοῶντες, 910  
ἀκταὶ τ' εἰνάλιοι ὁπότ' εὐδίοι ἠχῆσσαι  
γίνωνται, κορυφαὶ τε βοῶμεναι οὖρεος ἄκραι.

Verg. *G.* 1.356-359

*continuo ventis surgentibus aut freta ponti  
incipiunt agitata tumescere et aridus altis  
montibus audiri fragor, aut resonantia longe  
litora misceri et nemorum increbrescere murmur.*

Verg. *A.* 10.98 f., Pliny *NH* 18.359 *mare si ... murmurabit intra se, ventum praedicat ... , litora ripaeque si resonabunt tranquillo, asperam tempestatem, item maris ipsius tranquillo sonitus spumaeve dispersae aut aquae bullantes ... . saepe et silentio intumescit inflatumque altius solito iam intra se esse ventos fatetur*, Seneca *Agam.* 466-469, *Geop.* 1.11.7 ἄνεμον δὲ προμηνύει θάλασσα κυμαίνουσα (continued in next lemma), and a fragment of Psellos (*Hermes* 8 [1853] 167) ἄνεμον δὲ σοι σημαίνουσιν ἠχοῦντες ἐπὶ πλεῖστον αἰγιαλοὶ καὶ ἄθρόον ἀνοιδαίνουσα θάλασσα καὶ οἶον βομβοῦσαι αἱ κορυφαὶ τῶν ὄρων. The roaring of mountain tops, which forms part of a regular trilogy in this literature (Vergil substitutes the sound of trees) is reserved in *DS* for 31.215, προβοῶ, on which see the commentary. Bart.'s *sublevatum* may derive from an exemplar with οἴσουσα.

**29.201 ἀκταὶ βοῶσαι]** A poetic personification, as Heeger 11 notes, typically used of the sea; cf. *Il.* 17.265 ἡϊόνες βοῶσιν, 14.394 κύμα ... βοῶα, *Ai. PV* 431 βοῶ ... κλύδων. Note also *Geop.* 1.11.7 (continued from last lemma) καὶ ἐπὶ τοῖς αἰγιαλοῖς μεγάλα ἠχοῦσα.

**29.203-04 βορέας ... ἀρχόμενος]** [Arist.] *Probl.* 26.20 (942b2) and 26.45 (945a29) quotes a hexameter saying, ἀρχομένου γε νότου καὶ λήγοντος βορέας, in the latter chapter putting it into the same context found here: "Why is it that the South wind is weak when it begins to blow, but becomes stronger as it ceases, while with the North wind the contrary is the case, hence the proverb, εὖ πλεῖν ἀρχομένου κτλ" (tr. Forster). Th. *Winds* 5 paraphrase this line.

**29.204 παρήλιος]** For mock suns, see above, on 22.151. The necessary presence of ice crystals in the direction of the sun could indeed signal the onset of weather associated with them.

### 30

**30.206 πέμπτη καὶ δεκάτη ἀπὸ τροπῶν τῶν χειμερινῶν]** Schneider deserves credit for the correct reading. A parapegmatic annual weather sign is rare in this work; see above on 23.157 f. ἐὰν μὴ—ἢ ἄνεμος. It does, however, come in the midst of a section concerned specifically with the alternation between north and south winds, which, as *Probl.* 26 *passim* shows, was a common concern. Note 941b13-15 (26.12) ἔστι δὲ καὶ ἡ μετὰ τὰς χειμερινὰς τροπὰς πεντεκαίδεκάτη νότιος. Rehm *Parapegmastudien* 129 ff. argues that this sign derives from Euktemon (see introduction).

**30.207 βορείων ... ξηραίνει]** The usual result of Boreas, acc. to Th. *Winds* 59. ξηραίνει and ὑγραίνει either impersonal (Hort) or, less likely, intransitive with πάντα as subject.

**30.207-08 νοτίων δὲ ὑγραίνει]** Generally, but not universally, Notos was thought of as warm and moisture laden; cf. Th. *Winds* 57, (sc. οἱ νότοι) ὑγρότητα γὰρ ἐνιᾶσι τοῖς σώμασι καὶ θέρμην ἄλλοτρίαν θερμοὶ φύσει καὶ ὑγροὶ ὄντες, but here and elsewhere Th. describes Notos with other characteristics.

**30.208 ψοφῇ τῶν κεκολλημένων]** Th. *Winds* 58 also mentions how inanimate objects may be moistened or dried out by various winds, οἷον αἶ τε ῥηγνύμεναι χορδαὶ καὶ οἱ ψόφοι τῶν κεκολλημένων. As both verbs are imprecise, it would be hard to know what noise comes from what source. ψόφος can be almost any inarticulate sound, and κολλ- can be used of almost any man-made joints. Creaking furniture (caused by the drying out of joints) seems a better guess than, say, the cracking sound of metal objects as the atmospheric change makes curved surfaces bow in or out. The matter seems to be settled by *Probl.* 1.24 (862a27 f.), which asks διὰ τί ἐν τοῖς νότοις βαρύτερον ἔχουσι καὶ ἀδυνατώτερον οἱ ἄνθρωποι; The answer lies in the amount of moisture in our joints, which are likened to glued joints which make a noise when dried: δηλοῦσι δὲ οἱ ψόφοι τῶν κεκολλημένων, τὸ γὰρ γλίσχρον ἐν τοῖς ἄρ-

θροισ πεπηγὸς μὲν κινεῖσθαι κωλύει ἡμᾶς, ὕγρον δὲ λίαν ὃν συντείνεσθαι. Th. *HP* 5.6.2 discusses the glue used on the tenons in furniture making; and he frequently mentions in his two works on plants the wood-working qualities of the various woods; see G. M. A. Richter, *The Furniture of the Greek, Etruscans, and Romans* (London 1966) 122-125.

**30.208 <τι>]** suppl. Fu. is an easy way to regularize the text, but should be resisted, as a partitive genitive all by itself may occasionally serve as subject; cf. Hdt. 3.102 εἰσὶ γὰρ αὐτῶν καὶ παρὰ βασιλεί, K-G 1.346 An. 3.

**30.209 βόρεια]** As Furlanus noticed, this sentence has to be altered so that one of the south winds gives way (textually) to a northerly. We follow him in altering the second, as this produces a pleasing parallel with the next sentence: in each the hallmark of the coming wind (dryness of Boreas, moistness of Notos) is signalled by early effects in, respectively, furniture and feet.

**30.209 ἰδρῶσι]** The mss. (and Bart. *sudaverint*) are, V's ἰδρᾶσι not withstanding, in agreement. The Aldine's οἰδῶσι, should probably be rejected, therefore, although swollen feet are in fact a sign not of wind but of rain or storm, especially among older people, as the lowered air pressure before a storm will allow the blood in the feet to collect there, owing to poor circulation, and cause the feet to swell, allowing them to act like a crude barometer (as with Bill Fortenbaugh's mother, e.g.). Sweaty feet as a sign suggests that the moisture of one's feet presages the moist wind to come. Although Th. *On Sweat* offers no exact parallel, cc. 35-37, which treats sweaty feet and feet in water, are consistent; note esp. 35.225 οἱ ἰδρῶτες ὅπου θερμὸν καὶ ὑγρόν. Elsewhere in Greek literature, swollen feet are usually taken as a symptom (not a sign) of starvation; cf. Hes. *WD* 497, *Sc.* 265 f., [Arist.] *Probl.* 1.6, Verg. *Cat.* 13.40, Ov. *Met.* 8.807 f.

But whether the feet swell or sweat, it is worth noting that only here and in the next sign (shooting pains in the foot) does *DS* look to the human body and its sensations for weather signs, something that is nowadays rather common. (Böker 1613 missed this passage when he said that *die Grundschrift* of all weather literature contained no such signs.) This is even more noteworthy since the parallel passage just above on the sign from noise in furniture made a direct comparison to creaking human

joints. Perhaps one of the sources had a section of signs drawn from people's own perceptions. McCartney *CW* 24 (1930) 25 interprets Th. *Winds* 35 to mean that "we are responsive to changing conditions in the atmosphere and that they make themselves felt in advance of the winds they portend," but this may be reading too much into Theophrastos' Greek: καὶ ἐπὶ τῆς θαλάττης καὶ τῶν ὑδάτων ἐστὶ τισὶ τὰ αὐτὰ σημεῖα λαβεῖν. (But McCartney cites many interesting modern sources for people reading themselves for signs of impending weather.) Also noting the failure to regard bodies as weather signs is Plut. *De Sanit. Praec.* 14.129a (= Demokritos DK 68 B 147 = 580 Luria) "For it is strange to look attentively to the croaks of crows, the clucking of hens, and pigs raging over scraps, as Demokritos says, regarding them as signs of wind and storm; but not to take account of bodily motions, restlessness, and (other) preliminary feelings, and not to have any signs within one's own self of an imminent and forthcoming storm" (ἄτοπον γὰρ ἐστὶ κοράκων μὲν λαρυγγισμοῖς καὶ κλωσμοῖς ἀλεκτορίδων καὶ συσὶν ἐπὶ φορυτῶ μαργαινούσαις, ὡς ἔφη Δημόκριτος, ἐπιμελῶς προσέχειν σημεῖα ποιουμένους πνευμάτων καὶ ὄμβρων, τὰ δὲ τοῦ σώματος κινήματα καὶ σάλους καὶ προπαθείας μὴ προλαμβάνειν μηδὲ προφυλάττειν μηδὲ ἔχειν σημεῖα χειμῶνος ἐν ἑαυτῷ γενησομένου καὶ μέλλοντος).

For sweat as a sign in general, see G. Bastianini and C. Gallazzi, *Posidippo di Pella. Epigrammi* (Milan 2001) 143. The English poet John Taylor, on the other hand, devotes one section of his *Drinke and Welcome* (1637) to these signs:

Some by a painefull elbow, hip, or knee,  
Will shrewdly guesse, what wether's like to be:  
Some by their cornes are wondrous weather-wise,  
And some by biting of lice, fleas, or flies:  
The gowt, siccatica, the Gallian *Morbus*,  
Doth oft foretell if tempests shall disturb us;  
For though these things converse not with the stars,  
Yet to mans grief they are Astronomers.

**30.209-10 νοτία ἢ μεταβολή]** Not a very precise phrase, but clear enough in context: a change *to* the south; i.e., the beginning there of a wind. Cf. Thuc. 2.43.5 (in a speech) ἡ ἐναντία μεταβολή, a change *to* the opposite. The phrase occurs again, 31.218.

**30.210 ἐκνεφίου]** Hurricanes occur, according to Arist. *Mete.* 351a2-5, most often in autumn, next often in spring, when one wind “falls upon” another while it is still blowing. See Gilbert 558-563, who tries to distinguish ἐκνεφίας from τυφών. See further below, 36.264.

**30.210-11 ὁδαξῶν τὸν δεξιόν]** Schneider indicates a lacuna after these words, but we agree with Hort that this phrase can remain; for other examples of a participle without an accompanying finite verb, cf. K-G 2.109. Earlier editors construed as if the participle agreed with ἐχῖνος, which preserves the surface grammar at the cost of losing all sense.

**30.211 ἐχῖνος ὁ χερσαῖος]** The hedgehog, not to be confused (in Greek) with ἐχῖνος ὁ θαλάσσιος, the similarly prickly sea urchin (cf. Germ. *Seeigel*). Cf. Arist. *HA* 612b4-10 περὶ δὲ τῆς τῶν ἐχίνων αἰσθήσεως συμβέβηκε πολλαχοῦ θεωρηθῆσθαι ὅτι μεταβαλλόντων βορέων καὶ νότων οἱ μὲν ἐν τῇ γῇ τὰς ὁπὰς αὐτῶν μεταμείβουσιν, οἱ δ' ἐν ταῖς οἰκίαις τρεφόμενοι μεταβάλλουσιν πρὸς τοὺς τοίχους, Plut. *Sollert. Animal.* 972a τὸ δὲ κοιταῖον αὐτῶν ὁπὰς ἔχει δύο, τὴν μὲν πρὸς νότον τὴν δὲ πρὸς βορέαν βλέπουσαν· ὅταν δὲ προαίσθωνται τὴν διαφορὰν τοῦ ἀέρος, ὥσπερ ἰστίον κυβερνῆται μεταλαμβάνοντες ἐμφράττουσι τὴν κατ' ἄνεμον τὴν δ' ἐτέραν ἀνοίγουσι, Antig. *HM* 8; all that Pliny *NH* 8.133 claims for them is that *mutationem aquilonis in austrum condentes se in cubile praesagiunt*. The hedgehog's “one big trick” (Archilochos fr. 201 West; cf. Emped. 31 B 83) is to roll himself into a protective ball, but closing off one entrance to an imminent wind would run a close second. This behavior is attested for hedgehogs by K. Herter, “The insectivores,” in B. Grzimek (ed.), *Animal Life Encyclopedia* 1 (1975) 209: “Occasionally they also construct their own burrow in the ground. The tunnel frequently has two openings. One is usually plugged depending on the wind direction.” (According to Pliny *NH* 8.138 the squirrel also closes the entrance facing the wind.)

**30.211 σημεῖον]** σημαντικόν, the reading of most codd., appears elsewhere in *DS* only at 51.374, τὰ ὄρη τὰ σημαντικά, where the sense is not (as it would be if read here) a mere synonym for σημεῖον, but “mountains that are a source of signs.” This latter meaning is in accord with Aristotle's use, where σημαντικός is applied to things *generally*, not *specifically*, meaningful. Since later Greek uses σημαντικός + genitive in

the sense of σημείον (e.g., D.S. 3.4 σ. πάσης κακίας, Gal. *in Epid.* 17(1).405 K σ. παρωτίδων), V seems here to be witness to an early stage of its transmission. (Arist. *Top.* 106b35 demonstrating the several meanings of ὑγιεινός is the exception that proves the rule: οἷον εἰ ὑγιεινὸν τὸ μὲν ὑγιείας ποιητικὸν τὸ δὲ φυλακτικὸν τὸ δὲ σημαντικὸν ... ῥηθήσεται.)

**30.212 ὁπάς]** This is the classical word; κατάδυσσις in V's elaborate paraphrase is not found in this sense until the second cent. AD and ὁπή occurs again in *DS*, at 39.282 and 53.388.

### 31

**31.215 προβοῶ]** This is either what the mss. have or what they point to (*antesonet* Bart.). Only P<sup>ac</sup> has προσβοῶ (one word), which has been corrected to accord with the other mss. πρὸς βορρα, first printed by Aldus and then by all subsequent editors, does not even make for a coherent text, as Hort notes (he posits an ellipse just before). The mistake may have arisen from M, in which the omicron of this word has a tail that makes it look like a rho. For προβοῶ, cf. *Il.* 12.277 τὼ γε προβοῶντε μάχην ὤτρυνον Ἀχαιῶν, *Soph. Ph.* 218 προβοῶ τι γὰρ δεινόν, where in each case the προ- *may* but need not be (and is not so taken by LSJ or the commentaries ad locc.) temporal, which is how we choose to interpret it here. For the personification, see above, on 29.201 ἄκται. Cf. further *Arat.* 180 κορυφαί τε βοῶμεναι οὔρεος ἄκραι, with schol. ad loc. τῶν ὄρων βοήν. For roaring mountain tops as a weather sign, see 29.200 f. θάλασσα ... ἀνεμώδης. A dry, hot, katabatic wind (*Föhn* in German) can be quite noisy.

**31.216 πνεύματος γαλήνη]** The first word, deleted by Bonaventura, is necessary because, strictly speaking, γαλήνη refers only to the calmness of the water; cf. *Pl. Tht.* 153c νηνεμίας τε καὶ γαλήνας, *Arist. Top.* 108b25 (each is a kind of ἡσυχία) γαλήνη μὲν ἐν θαλάσσῃ, νηνεμία δ' ἐν ἀέρι. Here, however, we must understand “a calmness of wind,” ἐν θαλάττῃ spelling out the location.

**31.216 μεταβολὴν πνεύματος]** Here we must understand “a change *in direction*,” to provide the proper contrast with ἐπίδοσιν, which probably means (or does it only allow for?) an increase in the previous wind.



**31.217 ἄκραι ... νῆσοι]** At first glance, this could be taken to refer to clouds occluding the lower heights of headlands and peaks. (The peaks of one island separated by clouds so as to appear isolated might be better observed from one of the island's peaks, perhaps by one of the astronomers mentioned in c. 4, but this phenomenon might also be seen from a ship. As with the sweating feet, a moist condition is taken as sign of an imminent (and moist) south wind.) Clouds, however, are not specified; and a parallel passage from Arist. *Mete.* 373b10-11 suggests that *DS* is rather alluding to two varieties of mirages caused by atmospheric refraction: (i) *superior mirage*. When the air close to the surface, here that of the sea, is cooler than that above it, light rays are bent downwards, so that objects appear higher than their true position. This can even permit an object to be seen (a ship or mountain peak) that is below the horizon; or, as *DS* seems to mean here, for an object to be seen to hover in midair (Greenler 161 f.). *Mete.* 3.4, concerned with ἀνάκλασις ("reflection," because Aristotle and others explained refraction in these terms; when the distinction was understood διάκλασις was used for "refraction"; see Mugler *Optique* s.vv.), observes that distant and dense air reflects: διόπερ αἱ τ' ἄκραι ἀνεσπασμέναι φαίνονται ἐν τῇ θαλάττῃ, ... ὅταν εὖροι πνέωσι (313b10). (ii) *inferior mirage*. When, on the other hand, the surface of the sea is warmer than the air above, objects appear lower than their true position (Greenler 154-159). Thus, to take the case of the island(s), what under usual circumstances, probably from the fixed position of a nearby coast, is seen to be one island with high peaks, under the conditions described here, "loses" its lower level so that only now separated peaks are seen, each a "separate" island. (An inferior mirage is often seen in deserts, but it is understandable that Aristotle says ἀπὸ δὲ ὕδατος μάλιστα ἀνακλᾶται, 373b14.)

**31.217 ἐκ μιᾶς πλείους]** LSJ s.v. ἐκ A I 3, "To denote change or succession."

**31.218 δέ]** τε does not occur elsewhere in *DS*, so that this is an easy change, especially given Bart.'s *autem*.

**31.218-19 βόρειον]** Schneider mistakenly calls this an addition of Furlanus (placed after ὑποφ.), but it occurs in all mss. Th. *Winds* 60 also warns (in a two-line hexameter) of a cloud seen, presumably from a ship at sea, over a dark mainland: διὰ τί ποτ' λέγεται· μή ποτ' ἀπ' ἠπείρου

δείσης νέφος, ὥς ἀπὸ πόντου | χειμῶνος, θέρεος δὲ ἀπ' ἠπείριοιο μελαίνης. Similarly, [Arist.] *Probl.* 26.57 (which has ἀλλ' for ὥς). (Note the odd but metrically necessary hiatus at δὲ ἀπ', which has parallels in inscriptions, where metrical standards are lower.)

**31.219 ἄλω περὶ τὴν σελήνην]** For paraselenic halos, see Greenler 180 f.; B. L. Cardon, “An unusual lunar halo,” *American Journal of Physics* 45 (1977) 331. Like solar halos, the primary (see below for the secondary) ones are 22° away from the sun, and caused by the presence in the air of ice crystals. Since nights are generally less windy than days, the winds that arise at dawn after the observation of a lunar halo may have been, on the whole, stronger than normal. Or, after observation of something as unusual as a lunar halo, observers may have been more ready to notice the next day's wind. Lunar halos are mentioned by Arist. *Mete.* 373a27 πλεονάκις δὲ γίνονται αἱ ἄλω περὶ τὴν σελήνην διὰ τὸ τὸν ἥλιον θερμότερον ὄντα θάπτειν διαλύειν τὰς συστάσεις τοῦ ἀέρος, Seneca *NQ* 1.2.10, but most notably by Th. *Mete.* c. 14, “The halo round the moon occurs when the air becomes thick and is filled with vapor, so that a wavelike movement arises in it on account of the moonlight. In a similar way, if we throw a stone into water, a circular movement occurs round the stone” etc. (tr. Daiber).

*DS*'s plural (*pace* Hort, who translates “a halo”) includes the possibility of seeing the rarer and fainter secondary halo at 46° (Greenler 47-50), as is spelled out with greater clarity by Aratos 811-817, who even makes up a physically impossible third halo:

εἰ δὲ κέ μιν περὶ πᾶσαν ἄλωαι κυκλώσωνται  
ἢ τρεῖς ἢ δὺν περικείμεναι ἢ μί' οἷη,  
τῇ μὲν ἰῇ ἀνέμοιο γαληναίης τε δοκεύειν,  
ῥηγνυμένη ἀνέμοιο, μαραινομένη δὲ γαλήνης·  
ταὶ δύο δ' ἂν χειμῶνι περιτροχάοιντο σελήνην,  
μεῖζονα δ' ἂν χειμῶνα φέροι τριέλικτος ἄλωή,  
καὶ μᾶλλον μελανεῦσα, καὶ εἰ ῥηγνύατο μᾶλλον.

815

**31.220 ῥαγεῖσαι]** Conversely, at 51.372 we read that a uniform halo signals fair weather. The broken halos referred to are probably what are now called Parry arcs, some of which indeed look like broken rings around the sun, caused by the presence of complex ice crystal, which refract light through varying angles. See W. E. Parry, *Journal of a Voyage for the Discovery of a Northwest Passage* (London 1821; repr. NY 1968);

Greenler 38-44, with illustration on p. 35. A possible objection to this identification is that Parry arcs tend to be symmetrical about the sun's vertical axis, so that a "break" on one side has a counterpart on the other. Cf. Pliny *NH* 18.349 *si caligo orbisve nubium incluserit, ventos quae se ruperit*. Seneca *NQ* 1.2.5 also mentions broken halos. See Marriott 321 "The open side of the (lunar) halo tells the quarter from which the wind or rain may be expected."

**31.221 ἐπινεφέλων]** "If it is overcast"; sc. ὄντων, as in Hdt. 7.37, [Arist.] *Probl.* 939b15, where the verb is impersonal and the adjective predicate. On gen. absolutes without the verb, see K-G 2.102. An impersonal accusative absolute, ἐπινεφέλων, would not be recognized as such; cf. 50.367 χειμάζοντος.

**31.221 ὅθεν ἂν ἀνατέλληται]** Wood renders "*when* the sky is clouded, the wind will come from the quarter on which there is a lifting [of the clouds]" (our italics, his brackets). This is hardly elegant, but as he says it makes for far greater sense than to use ὅθεν ἂν ἀνατέλληται, a general statement, to apply to the one spot on the horizon where the sun must rise every day, as others do. But as this verb can be applied to other heavenly bodies such as the moon, which has just been mentioned, ὅθεν can be retained.

**31.222 κηλάδες νεφέλαι]** Hesychios s.v. κηλάς· νεφέλη ἄνυδρος, καὶ χειμερινὴ ἡμέρα, καὶ αἶξ, ἥτις κατὰ τὸ μέτωπον σημεῖον ἔχει τυλοειδές. (The definition concerning the goat is repeated s.v. κηλάδες.) Since a κηλὶς is a stain or blemish, Hort may be right to suggest that "mottled clouds" are cirrocumuli, filling the sky with small narrow bands of clouds (a "mackerel sky"); Dunlop 46 f.

### 32

By the minimal standards of *DS*, this chapter stands out as a distinct and well formed literary unit: lightning everywhere, lightning from only one quarter, and then a survey of lightning through the seasons beginning with summer and ending with spring. Perhaps this paragraph was taken whole from an earlier work whose authorship was noted in the first sentence. Another unusual feature is the use of παύουσι and παύονται as though the relationship between lightning and winds were a causal one,

which is perfectly in accord with a search for a scientific theory, but which we have seen is largely absent from *DS* so far, where *post hoc* is not explicitly converted into *propter hoc*. Pliny *NH* 18.354 is also devoted to interpreting lightning, the factors being season, time of day, direction, and the present state of the sky. It is noticeable that none of Pliny's signs precisely matches those of *DS*, although one comes close; see below.

**32.223 πανταχόθεν]** Did anyone really need to be told that lightning on all sides was a sign of rain?

**32.225 θέρους]** Cf. Aratos 924 f. καὶ θέρεος βρονταί τε καὶ ἀστραπαὶ ἔνθεν ἴωσιν, | ἔνθεν ἐπερχομένοιο περισκοπέειν ἀνέμοιο, Pliny *NH* 18.354 *cum aestate vehementius tonuit quam fulsit* [contrast *DS*'s καί], *ventos ex ea parte denuntiat, contra si minus tonuit, imbrem*, *Geop.* 1.3.3 = Anon. Laur. 9.

**32.231 ἥττον ... ὥσπερ]** For ὥσπερ after comparisons, cf. Xen. *HG* 2.3.17 ἥττον τι οἶει ὥσπερ τυραννίδος ταύτης τῆς ἀρχῆς χρῆναι [sc. ἡμᾶς] ἐπιμελεῖσθαι ("for us, less than a tyranny, to care less for this government"), Xenoph. B 3.8 οὐ μείους ὥσπερ χίλιοι; cf. LSJ s.v. ὥσπερ IV; T. W. Allen, *Rev. Philol.* 60 (1934) 239. Earlier editors and translators take ὥσπερ as if it were likening the situation in winter to that of spring, but the whole sentence is set in contrast with the preceding, which describes winter and fall; which cannot be in turn contrasted with what pertains to spring and winter.

**32.231 ἂν ταῦτά σημεῖα γένηται]** The ἂν ... λέγω of the codd. is problematic. With the former word as the simple particle Hort understands εἶναι, which he thought "perhaps should be read." But there is no "perhaps" about it; ἂν can stand alone only when its verb is immediately clear from context, usually because it has appeared in the previous clause; K-G 1.243 f. Nor is a potential optative (which εἶναι would have to represent) found in these weather signs. The latter word is also suspect, as nowhere else does *DS* use a first-person singular verb (although this could have been taken over from the original posited above). Note, moreover, that in Bart. *si* = ἂν = ἔάν and λέγω is missing: *vere autem minus, si eadem signa sicut et hieme*. (Wood takes σημεῖα as predicate, which results in a forced sentence that directly contradicts the preceding one: "But in spring I take less account of these same matters as

signs, as also in winter.”) If Bart. reflects the true text, an original γένηται may have been written as a particularly messy compendium, which was missing in Bart.’s source and misread by the source of the Greek mss.

## 33

**33.232 νότου πνέοντος βορρᾶθεν]** Cf. Aratos 427 βορέω δὲ παρ’ ἀστράπτῃ ἀνέμοιο.

**33.233 ἔωθεν ἀστράπτῃ]** The mss. present an ἄν without a subjunctive. Bart.’s version, *si autem ab oriente coruscat*, suggests that his source had ἔωος (which can mean “east,” as ἔωθεν cannot) ἀστράπτῃ, which provides a proper verb. Now, however, with this impersonal verb, ἔωος cannot modify an understood “wind,” as the adjj. of the next clause do. ἔωθεν easily solves the problem.

**33.233 ἄλλοι]** “Winds,” presumably; but which winds? “Other winds than a south wind” (Hort). “Other [such] winds” (Wood). The Latin translators get away with an uninformative *alii*. The logical structure of this passage is a typical mishmash, so that Hort’s going back merely as far as he does seems incautious. Wood’s understood τοιοῦτοι would rob the previous clause of almost all of its predictive value. The following οἱ δὲ δειλινοὶ suggests that we are still dealing with morning winds, the only contrast remaining lies with ἀστράπτῃ, but this would be a crabbed way of saying “Those winds arising in the morning without lightining.” One solution might be to conjecture μεσημβρινοὶ for ἄλλοι, which would describe what happens to winds that blow at midday (while lightining flashes), between those in the morning and those in the evening. Cf., e.g., Th. *Winds* 31, where there is a contrast between τῆς μεσημβρίας and ἅμα τῇ δείλῃ. This, however, is not paleographically attractive, and it might grant the text a logical structure it never had.

**33.234-5 βορέαι ... νότοι]** Although the mss. show more regular forms, these plurals occur, respectively, 16 and 17 times in Aristotle. The plural refers somewhat vaguely to “winds from the north ... south”; cf. Arist. *Mete.* 361a21-23 καλοῦνται δ’ οἱ μὲν ἀπὸ τῆς ἄρκτου βορέαι, οἱ δὲ ἀπὸ τῆς μεσημβρίας νότοι, 364a13-16 ἔστι δὲ τῶν εἰρημένων πνευμάτων βορέας μὲν ὃ τ’ ἀπαρκτίας κυριώτατα καὶ θρασείας καὶ μέσης ... νότος δὲ ὃ τε ἰθαγενῆς ὁ ἀπὸ μεσημβρίας καὶ λίψ.

**33.235 ἐν περιτταῖς]** Cf. Pliny *NH* 2.129 *septentriones impari fere desinunt numero*.

**33.236 αἴρονται]** As in English, though not as commonly, winds in Greek can be said to “rise” (although one would not know this from LSJ); cf., e.g., Th. *Winds* 17, 31 ἐπαίρεσθαι. Because it occurs between two forms of παύω, V converted it to ἄρχονται. Winds can in fact occur as the rising sun warms the land and then the air and sets up a temperature variation.

**33.236 ἄμ' ἡλίῳ ἀνατέλλονται καὶ σελήνῃ]** Cf. Th. *Winds* 15 ὁ ἥλιος δοκεῖ καὶ κινεῖν ἀνατέλλων καὶ καταπαύειν τὰ πνεύματα· διὸ καὶ ἐπαυξάνεται καὶ πίπτει πολλάκις. ... 17 ποιεῖ δὲ καὶ ἡ σελήνη ταυτά, πλὴν οὐκ ὁμοίως· οἷον γὰρ ἀσθενὴς ἥλιός ἐστι. διὸ καὶ νύκτωρ δεινότεραι.

**33.236 ἐάν δ']** The lack of a δέ in all the Greek mss. could reflect the cut-and-paste style rather than arising from a scribal omission. More usually in this work, a δέ causes us mentally to insert a μέν in the preceding clause. We choose, however, to follow Bart. (*autem*).

**33.237 παύσωσιν]** Sc. πνεύματα; cf. Th. *Winds* 15, cited above. Schneider (not Wimmer, as Hort says) conjectured μή before this word, which Wimmer strangely prints without translating.

**33.237 ἐπιτείνει]** Intransitive, not a very common use in classical Greek, but note Arist. *Phys.* 238a5 ἐπιτείνει ἢ κίνησις, *De Caelo* 288b27, *Pol.* 1293a26, fr. 374 Gi. Hort, following Furlanus, adds “presently,” presumably to make the run of thought smoother (and be more in accord with Theophrastos’ account).

**33.237-8 σελήνης δὲ ληγούσης]** The variation between V and M can be explained if a marginal ἦτοι φθινοῦσης became an intrusive gloss in V and if φθινοῦσης supplanted ληγούσης in M. φθινοῦσης is of course the usual word for the waning of the moon/month (but cf. *IG* XII(3) 325.20 f. μηνὸς ... λήγοντος), but *DS* (or its source) may have liked the jingle of ληγούσης λήγει. The thought is that if the wind affects winds, less of the moon will yield less wind; cf. Th. *Winds* 17 αἱ σύνοδοι τῶν μηνῶν χειμερινώτεραι.

**33.238-9 χρονιώτερα δὲ καὶ ἰσχυρότερα]** Th. *Winds* 16 f. disagrees (c. 17 cited in part above), also allowing for greater variation in the intensity of winds caused by sun and moon.

### 34

**34.240-2 ἐὰν ἐτησίαι ... ἐναντίος]** For statements of this sort, correlating the nature of successive seasons, see below, c. 44.

**34.240 ἐτησίαι]** In theory, etesian winds are any winds which were felt to be annuals (being derived from ἔτος). According to Aristotle, who describes them most fully (*Mete.* 361b31-362a31), etesians proper, *the* Etesians, begin after the summer solstice and again after Seirios rises (late July); weaker etesians blow after the winter solstice. They generally come from a northerly or northwesterly direction, but as Pliny *NH* 2.128 notes, they may come from a number of directions (he also records that midwinter etesians are called *ornithiae*; cf. Hipp. *Epid.* 7.105, Arist. *Mete.* 362a23). See also *Probl.* 26.51. Th. *Winds* mentions them often, without paying them special attention. See Rehm, “Etesiai,” *RE* 6 (1907) 713-717; Gilbert 570-572, McCartney *CW* 24 (1930) 18 f. In form, ἐτησίαι (plural only, with or without ἄνεμοι) is, like ὀρνιθίαι and some other names for winds, a masculine adjective. See L. N. Carapiperis, *The Etesian Winds*, vol. I, *The Opinions of the Ancient Greeks on the Etesian Winds*. Ἐθνικὸν Ἀστεροσκοπεῖον Ἀθηνῶν. Ὑπομνήματα, Ser. II, Μετεωρολογικά, 9. Athens 1962; West ad Hes. *WD* 663.

**34.242 πρὸς κορυφῆς ... μηκύνεται]** Cf. Arat. 920 ἢ νεφέλη ὄρεος μηκύνεται ἐν κορυφῇσιν, Pliny *NH* 18.356 *cum in cacuminibus montium nubes consident* (as as sign of storm).

**34.243-4 αἱ νεφέλαι ἐπὶ ... πνευσοῦνται]** The mss. present a knotty sentence. ἐκ does not sit well with προσίζουσαι, and ὀπισθεν gives location not source. Yet both Wood and Hort agree in ignoring ἐκ—“settle down *on*,” “cling *to*”—and translating ὀπισθεν as “*from* behind,” “*from* the back.” This does indeed seem to be the sense, but in order to obtain it from a Greek text, we suggest the modest alteration of ἐκ to ἐπὶ and reading ἐντεῦθεν for ὀπισθεν. Cf. the immediately preceding sentence, where ταύτη ~ ἐντεῦθεν, and 22.145-7 καὶ ἐὰν ἐπὶ τὸ Πήλιον νεφέλη προσίξῃ, ὅθεν ἂν προσίξῃ ἐντεῦθεν ὕδωρ ἢ ἄνεμον σημαίνει. Note

also the similar weather prediction in cod. Mutin. 85 (CCAG 4.4.110; see introduction) ἔὰν ἐπὶ τὰς κορυφὰς τῶν ὀρέων ἐφεζόμεναι καὶ ὥς ἐν κύκλῳ ἐπαίρωνται ἕως κορυφῶν τῶν ὀρέων, ἐκεῖθεν ἐλεύσεται ὁ ἄνεμος.

**34.244 Ἄθως]** Mt. Athos, 2033m high and located at the southern tip of Cape Akte in Macedonia, was visible to sailors from many miles out at sea. Clearly visible in M, it must have been obliterated in H, perhaps by an inkblot as it was passed around Aldus' shop. The one page remaining of H as well as others used by Aldus' printers show many ink marks. (A similar loss marked by a space occurs in the Aldine at 46.338 ὁ ἥλιος.) At any rate, the Aldine leaves a blank to indicate that a word cannot be read. Later editions mark the loss either with either a cross (†, Furlanus, Heinsius) or an asterisk (\*, Grynæus). Furlanus in his notes, however, argues that the missing mountain was Hymettos, and he was followed by Schneider, who also, on what evidence we do not know, argued for Athos, and in this latter choice was followed by Wimmer. Hymettos was not a bad guess, "nam Hymetti supra etiam habita mentio" (Furlanus 123), but so too have other mountains been mentioned in c. 4. Bonaventura more cleverly derived the name Mt. Mysios from the mss. μέσος.

**34.244 μέσος διεzeugμένος]** Cf. 22.145 ἡ Εὐβοία ὅταν διαζωσθῇ μέσῃ, where as here "by clouds" must be supplied.

**34.244 νότιος]** This adjective when applied to a stationary body gives either its relative position, "to the south, southern," or means "moist." Applied to a mobile atmospheric condition (rain, wind, storm), it means "from the south." What it cannot mean is "subject to a southern wind," which is in effect how Wood and Hort render: "mountains so begirt indicate S. wind" (Wood), "there will generally be a southern wind" (Hort's impersonal translation of both νότιος and νότια). "Moist," on the other hand, slightly extended to mean "source of moisture," is lexically easier, as well as being truer to meteorological facts than Wood and Hort's view.

**34.245-6 κομῆται ἀστέρες]** These hirsute stars are discussed most fully by Arist. *Mete.* 1.6-7 and Seneca *NQ* 7 (and by Poseidonios; cf. fr. 131 f. E-K). In general see Gilbert 642-658, esp. 642 f. on their hairiness. For their role as weather signs, cf. Arist. *ibid.* 344b18-20 περὶ δὲ τοῦ



πυρώδη τὴν σύστασιν αὐτῶν εἶναι τεκμήριον χρὴ νομίζειν ὅτι σημαίνουσι γιγνόμενοι πλείους πνεύματα καὶ αὐχμούς, b26-28, Aratos 1092 f. (sc. εἶεν) μηδ' εἷς μηδὲ δύο μηδὲ πλέονες κομόωντες | πολλοὶ γὰρ κομόωσιν ἐπ' αὐχμηρῷ ἐνιαυτῷ, Ptol. *Tetrab.* 2.14.10 αἱ μὲν τῶν κομητῶν συστροφαὶ ὡς ἐπίπαν αὐχμηροὺς καὶ ἀνέμους προσημαίνουσι, Claudian *Proserp.* 1.231-236, esp. 235 f. *crine minaci | nuntiat aut ratibus ventos aut urbibus hostes*. Since the ancient view, from Aristotle onwards, usually explained their tails in terms of density of air and exhalations, it would seem reasonable that they had predictive value for weather; Gilbert 649. As Kidd ad Arat. 1092 notes, since true comets are rare, the frequent discussion in ancient literature of “many” seen at (almost) the same time may point to some confusion with meteors. See below, 57.419. Although the Aristotle passage quoted above agrees with *DS*, Aristotle ap. Sen. *QN* 7.28.1 (not among Gigon’s fragments) says otherwise: *Aristoteles ait cometa significare tempestatem et ventorum intemperantiam et imbrium*; see Cronin “Authorship” 309, who tentatively suggests “That Aristotle in a work now lost and concerned partly or entirely with weather signs expressed the opinion about comets ascribed to him by Seneca, or else that Seneca is incorrectly recalling the words in *Meteorology*.” Another possibility is that in Seneca’s copy of Arist. *Mete.* (or an intermediate source) χειμῶνας had been miswritten as αὐχμούς. See Marriott 215 “After an unusual fall of meteors, dry weather is expected.” On comets as weather signs in general, see McCartney *CW* 23 (1929) 12 f.

**34.247 πάχνην]** “Hoar frost,” τὸ ἐπὶ γῆς συμπαγὲν ἐκ δρόσου (Pl. *Tim.* 59e); cf. D.L. 7.153 ἐπειδὴν ἢ ἐκ γῆς ἢ ἐκ θαλάττης ἀνενεχθεῖσα ὑγρασία ὑφ' ἡλίου μὴ τυγχάνη κατεργασίας· καταψυχθὲν δὲ τοῦτο πάχνην καλεῖσθαι. (Coming as it does between two explicit references to Poseidonios this too may derive from him [= F 263 Thummer], but is not so regarded by Edelstein-Kidd). Th. *Winds* 50 quotes the second half of a dactylic proverb: φιλεῖ δὲ νότος μετὰ πάχνην, as does [Arist.] *Probl.* 26.3, which derives from *Winds* 50.

**34.247 μύκητες]** See above, on c. 14.

### 35-37 The stations and natures of the winds

With the exception of one prediction of the usual sort (on wind-borne thistles), this passage stands out from the rest of *DS*, in that it reads more like a short treatise on winds in general. Although some of the statements concerning the nature of the winds have implications for weather prediction, this is not their primary function. Since this passage appears at the end of the section on winds, it is easy to imagine that it was inserted later; the proper place for such a disquisition would be at the beginning. And *DS*, as constituted, clearly does not feel the need for such general passages anywhere else.

On the other hand, we are told that Aristotle, in *his* work on weather signs included the fragment now known as *On the Position and Names of Winds* (see next lemma), which is primarily a list of wind names (an anemasticon?), telling us what each wind is called and what is its domain, beginning with Boreas in the north and working its way around the windrose in a clockwise direction; see the Appendix. It would seem then that Aristotle (or whoever wrote *Vent. Sit.*) thought it appropriate to include a brief overview of the winds, perhaps so that readers throughout Greece would be able to “Translate” the Attic wind names into their own area’s preferred appellations. *DS*, on the other hand, is more concerned with the characteristics of each wind than its various names. In this it is somewhat like Theophrastos, who, however, in his sections on the nature of the individual winds (*Winds 37-45 et passim*) pays more attention to the natural causes of these differences. And in Aristotle’s *Meteorologica* 2.6 the emphasis is on the relative positions of the winds (especially whether or not they are diametrically opposed to others): περὶ δὲ θέσεως αὐτῶν καὶ τίνες ἐναντίοι τίσι καὶ ποίους ἅμα πνεῖν ἐνδέχεται καὶ ποίους οὐ, ἔτι δὲ καὶ τίνες καὶ πόσοι τυγχάνουσιν ὄντες καὶ πρὸς τοῦτοις περὶ τῶν ἄλλων παθημάτων κτλ. (363a21-4). There is thus no one reason for including a windrose in one’s text, which makes its inclusion in *DS* all the more odd, as it is the only one of the four without justification within the text. See G. Kaibel, “Antike Windrosen,” *Hermes* 20 (1885) 579-624; A. Rehm, *Griechische Windrosen*, Sitzungsab. d. Bayer. Akademie d. Wissensch., Phil. Kl. 1916, Abh. 3; D’Arcy W. Thompson, “The Greek winds,” *CR* 32 (1918) 49-56; R. Böker, *RE* 8 A (1958) “Winde: E. Windrosen,” 2326-81; J. Mansfeld, *The Pseudo-Hippocratic Tract Περὶ Ἑβδομάδων Ch. 1-11 and Greek Philosophy* (Assen 1971) 146-155; B. Obrist, *La cosmologie médiévale. I. Les fondements antiques* (Florence 2004).

## 35

**35.249 στάσεις]** The “stations” of the winds are the various points whence they arise; cf. Hdt. 2.26.2 (where also the verb ἵστημι is used of winds). Alkaios’ τῶν ἀνέμων στάσιν (fr. 208a Voigt) comprehends the political use of this noun as well. According to the heading in the mss. Aristotle included a section in his *Περὶ Σημείων* (ἐκ τῶν Ἀριστοτέλους Π. Σημείων) a section on the ἀνέμων θέσεις καὶ προσηγορίαι (973 Bekker = fr. 363 Gi.); this need not have been his own word (cf. Arist. *Mete.* 362b33 τῶν πνευμάτων ἢ στάσις) but more likely, thinking of the diagram he drew to show positions of the winds, he was applying this word in its geometrical sense here, as in *Mete.* 2.6 (see next lemma). In any case, it seems clear that the compiler of *DS*—if he had Aristotle in front of him—decided to omit the annotated list. On the textual tradition of *Vent. Sit.*, see D. Harlfinger and D. Reinsch, “Die Aristotelica des Parisinus gr. 1741: Zur Überlieferung von Poetik, Rhetorik, Physiognomik, De signis, De ventorum situ,” *Philologus* 114 (1970) 28–50. For its text, see the Appendix.

**35.249–50 τῷ γράμματι]** A more usual word would be διάγραμμα (see Mugler, *Dict. Géométrique* s.v.) or ὑπογραφή, but γράμμα in the sense “picture” (LSJ s.v. I), although less technical, can be retained (διαγράμματι though would be an easy conjecture). The diagram of *DS*’s windrose has not been transmitted by the mss., but it can be deduced from Aristotle’s, which, also not drawn in any extant ms., can be reconstructed from *Mete.* 2.6 (δεῖ δὲ περὶ τῆς θέσεως ἅμα τοὺς λόγους ἐκ τῆς ὑπογραφῆς θεωρεῖν 363a25) and *Vent. Sit.*, as modified by Th. *Winds*: see Gilbert 539–557, Coutant & Eichenlaub 1–liii, whom we follow, and below, on ἀπηλιώτης. Diagrams were inserted into scientific texts as early as the fifth century by Antiphon, Hippokrates of Chios, Demokritos, and Anaxagoras; see further O. Neugebauer, *A History of Ancient Mathematical Astronomy* (Berlin 1975) 2.751–755, who cites [751 n. 1] some later texts with figures: Euclid, Autolykos, Theodosios. In this immediate context *DS* calls Boreas Aparktias, calls the NW wind only Argestes, and ignores Phoinikias. Some few further details will be given below; for a fuller discussion of Greek winds, see Gilbert Tl. II, Kap. 7, Coutant & Eichenlaub, and D’Arcy W. Thompson, “The Greek winds,” *CR* 32 (1918) 49–56.

**35.251 ἀπαρκτίας]** Another name for Boreas, used by Aristotle in describing his windrose, either alone or, it would seem, as an adjective for the former (*Mete.* 363b15 where eds. insert καί between the two names), although Boreas may be an intrusive gloss (without the ἥ that it has in *DS*; see below).

**35.251 θρακίας]** This form, and not θρασκίας, which is the form favored by Aristotle, is found throughout *M* (*V* always has θρασκίας); and not θρακίας either, which is what *LSJ* say of this word in *DS*. θρακίας is also found in *IG* XIV.308 (a bilingual list of winds found in Rome) and Arist. *Vent. Sit.* 973 b17 (κατὰ μὲν Θράκην Στρυμονίας).

**35.251 ἀργέστης]** The NW wind (*DS* has been working its way counterclockwise from due north). Aristotle often describes this trio of winds as a unit: He too says ἐπιπίπτουσι δὲ τοῖς ἄλλοις μάλιστα καὶ παύουσι (*Mete.* 364b3-4), and that in doing so they bring fair weather, unless they are cold, in which case they are likely to bring hail (ibid. 22-23). And in the roundup of the winds' characteristics in the next two chapters these three appear as a unit four more times. As will be noted in detail below, there are many parallels between this section of *Mete.* (2.6) and *DS*.

*V*'s regular spelling of this wind, ἀργέτης, although not noted by the lexicographers, must represent a later variant; see previous lemma. For the meaning of this name, which in Homer functions as an epithet for Notos and in Hesiod for Zephyros, see Gilbert 542 f. Th. *Winds* 51 (= Adesp. Eleg. 7 W<sup>2</sup>) quotes a pentameter that associates Argestes with clouds in the neighborhood of Knidos and Rhodes: ἀργέστη δ' ἀνέμω πᾶσ' ἔπεται νεφέλη.

**35.251-2 ὕπ' ἀλλήλων διαλύονται]** "As people say, the winds do battle when they blow against each other" (Th. *Winds* 54); cf., e.g., *Il.* 13.333 f., where the strife of the two armies is likened to blasts of winds; Alk. fr. 208a (above, on 35.249 στάσεις).

**35.253 ἐπὶ δεξιᾷ]** Cf. Pliny *NH* 2.128 ... *a laevo latere in dextrum ut sol ambiunt*; i.e., from east to west, the observer facing south, as Rackham notes ad loc. For an explanation, see Arist. *Mete.* 364b14-17 αἱ δὲ περιστάσεις γίνονται αὐτῶν καταπαυομένων εἰς τοὺς ἐχομένους κατὰ τὴν τοῦ ἡλίου μετάστασιν, διὰ τὸ κινεῖσθαι μάλιστα τὸ ἐχόμενον

τῆς ἀρχῆς· ἡ δὲ ἀρχὴ οὕτω κινεῖται τῶν πνευμάτων ὥς ὁ ἥλιος. On the windrose this translates as “clockwise.”

**35.254 νότος ... ξηρός ... ὑγρός]** A reason for this is given by Th. *Winds* 7 ὁ δὲ νότος ἥττον τε ἔχων ὕλην, καὶ ταύτην οὐ πηγνὺς ἀλλ’ ἀπωθὼν, αἰθρίαν ἄγει τοῖς πλησίον, ὑετιώτερος δ’ αἰεὶ τοῖς πόρρω. See also *Probl.* 26.19 (942a29) διὰ τί ὁ νότος οὐκ ἀρχόμενος ἀλλὰ λήγων ὑέτιος;

**35.254-5 καὶ ὁ εὖρος]** As Arist. *Mete.* 364b20 says: ἀπ’ ἀρχῆς δὲ οὗτος ξηρός, τελευτῶν δὲ ὑδατώδης. This phrase, though, looks like an intrusive gloss.

**35.255 ἀπηλιώτης]** That the Aristotelian windrose represents an attempt to impose order on the various names and directions Greeks applied to the winds is nicely demonstrated here. Most Greeks, Aristotle most of the time included, were happy to call the east wind Euros, whereas Sicilians called it Kaikias. The windrose assigns these three names adjacent positions which they probably never enjoyed in any one Greek location. Th. *Winds* 62 also notes that Apeliotes was also called Hellespontias (presumably elsewhere in mainland Greece), Karbas by the Phoenicians, and Berekyntias by the Pontine Greeks. Argestes was also called Olympias or Skiron in Greece proper (the place of Argestes on the Tower of the Winds in Athens is taken by Skiron), and Kirkias in Sicily. See Gilbert 545-547.

V’s reading (ἄφ-) is a later variant (which also appears in Latin texts); cf. *IG* XIV.308.

**35.255-6 διὰ λεπτῶν]** Does this refer to the gentleness of the rain (“in light showers,” Hort) or of the wind (“light breezes,” Wood)? For the former, the medical writers offer some slight parallels, where wine, milk, and vomit are so called; but these liquids are light when most watery, whereas rain is pure water, and we mean something different when speaking of a light shower. Closer would be Eur. *IA* 813 λεπταῖς ... Εὐρίπου ῥοαῖς, except that this is Markland’s conjecture for the ms.’ πνοαῖς. It is, however, a most reasonable conjecture; cf. Ion of Chios F 18 TrGF λεπτὸς Εὐρίπου κλύδων, and note that at Soph. *Ant.* 1238 the mss. offer both πνοήν and (correctly) ῥοήν. The range of λεπτός, however, is so wide that it could, even if a parallel is lacking, easily refer to breezes. With some hesitation, then, we so render it here.

## 36

**36.257 ὕγροί]** Here and below with χαλαζώδης, νιφετώδης, κτλ, we follow Hort in translating and understanding “*bringing* [sc. sooner or later] moisture, hail, snow,” etc., which reads better in the context of a work interested in predicting weather, although strictly speaking these adjj. do not allow for such temporal slippage. Note too that sometimes the initial adjective applying to two or more winds is sometimes singular and other times plural.

**36.257 χαλαζώδης]** See above on 25.169.

**36.258 νιφετώδης δὲ ὃ τε μέσης καὶ ἀπαρκτίας]** Almost = Arist. *Mete.* 364b23, who adds as a reason for this οὗτοι γὰρ ψυχρότατοι.

**36.259 [ἢ βορέας]]** Hort correctly excludes. In this passage there is no possibility that “either Meses *or* Boreas brings snow,” whereas Aparktias would very likely be glossed as Boreas with the common *or*-formula, at first in the margin and then located wrongly in the text. Note too that Boreas is absent from the parallel passage in *Mete.* quoted in the previous lemma.

**36.259-60 καυματώδης δὲ νότος καὶ ζέφυρος καὶ εὖρος]** = Arist. *Mete.* 364b23.

**36.260-1 ἐκ πελάγους ... διὰ γῆς]** See Gilbert 565 f., who summarizes the ancient views that in general the seawind was understood as the return of a wind originally from the land.

**36.261-2 καικίας μάλιστα εἴτα λίψ]** According to the windrose, these are ἐναντίοι ἄνεμοι, which ἡ ταῦτο ποιοῦσιν ἢ ἐναντίον, οἷον ὕγροί λιβ καὶ καικίας (Arist. *Mete.* 364b17). Opposite winds generally blow in opposite seasons (364a32-33).

**36.263 καικίας δὲ μόνος πνέων ἐφ' ἑαυτόν]** Cf. Arist. *Mete.* 364b12-14, exceptionally, ὁ δὲ Καικίας οὐκ αἶθριος, ὅτι ἀνακάμπτει εἰς αὐτόν· ὅθεν καὶ λέγεται ἢ παροιμία “ἔλκων ἐφ' αὐτόν ὥστε καικίας νέφος” (an iambic trimeter, *Frag. Trag. Adesp.* 50 Nauck), Th. *Winds* 37 ὁ μὲν γὰρ Καικίας μόνος ἐφ' αὐτόν ἄγει τὰ νέφη καθάπερ

καὶ ἡ παροιμία λέγει. *Probl.* 26.1 and 29 offer more details of the circuitous path taken by Kaikias that allows it to round up clouds; also Pliny *NH* 2.126 *Caecian in se trahere nubes*.

**36.263 αἰθριοί**] As Arist. *Mete.* 364b4-10 explains, this is so because their source is closest to us (since the *oikoumene* lies in the north, 364a7) and so, being stronger, can drive away clouds.

**36.264 ἐκνεφίαι**] “Hurricanes.” So too *Mete.* 365a1-5 ἐκνεφίαι δὲ γίνονται μετοπώρου μὲν μάλιστα, εἴτα ἕαρος, καὶ μάλιστα ἀπ. καὶ θρ. καὶ ἀργ. αἴτιον δ' ὅτι οἱ ἐκνεφίαι γίνονται μάλιστα ὅταν τῶν ἄλλων πνεόντων ἐμπίπτωσιν ἕτεροι, οὗτοι δὲ μάλιστα ἐμπίπτουσιν τοῖς ἄλλοις πνέουσιν (above, c. 35). Cf. Varro ap. Nonium Marcellum 1.66 *ventique frigido se ab axe eruperant phrenetici, septentrionum filii, secum ferentes tegulas, ramos, syros*.

### 37

**37.267 ἀστραπαῖος**] Cf. Arist. *Mete.* 364b30-31 (ms. E) ἀστραπαῖοι δὲ μάλιστα οὗτοι (sc. ἀπ. θρ. ἀργ.) τε καὶ Μέση· διὰ δὲ τὸ ψυχρὸν ἀστραπή γίνεται. For ἀστραπαῖοι the other mss. have (in varying word order) ἀστράς δὲ ποιοῦσιν μάλιστα.

**37.269 πάπποι**] “Grandpas,” as the white fluffy seed containers of thistle are reasonably called; cf. Hesych. s.v. πάππος, Eustath. ad *Il.* 5.408 and *Od.* 11.520, both quoted by Kidd on Aratos 921:

ἤδη καὶ πάπποι, λευκῆς γήρειον ἀκάνθης,  
σῆμ' ἐγένοντ' ἀνέμου, κωφῆς ἀλὸς ὁππότε πολλοὶ  
ἄκρον ἐπιπλώωσι, τὰ μὲν πάρος, ἄλλα δ' ὀπίσσω. (921-923)

So also *Geop.* 1.11.7 καὶ ἄκανθαι καὶ ξηρὰ φύλλα ἐναντία ὑπὸ τῶν ἀνέμων εἰλούμενα, Verg. *G.* 1.368 *saepe levem paleam et frondes volitare caducas*, Pliny *NH* 18.360. Modern weather lore has it that dandelion (*taraxacum officinale*) can predict storms, either by closing their blossoms beforehand or by having the thistledown blown off when there is no discernable wind; see R. Inwards, *Weather Lore* (London 1898) 183 ff. N. R. Silvester, “Notes on the behaviour of certain plants in relations to the weather,” *Qu. J. Royal Meteorological Society* 52 (1926) 21, was willing to allow “That vertical currents ascending beneath a thundercloud would cause the down to fly off in an apparent calm,” but his own

scientific observations failed to find evidence that this was indeed the case; nor that the blossom closed before rain.

**37.270-1 ἀστέρες διάπτωσι**] See 13.83, above, where shooting stars (and their direction) were given as signs of rain and wind.

### 38

**38.273 χειμῶνος**] How does a χειμῶν differ from rain and wind, the two previous topics? Presumably by combining them in significant amounts; or, since χειμῶν is also the word for “winter,” by substituting snow or hail for rain. In any case, storms were distinguished as early as Homer; cf. *Od.* 4.566 οὐ νιφετὸς οὔτ’ ἄρ χειμῶν πολὺς οὔτε ποτ’ ὄμβρος; cf. *Hdt.* 7.188.2 χειμῶν τε μέγας καὶ πολλὸς ἄνεμος ἀπηλιώτης. There may be some hendiadys (or hendiatareis) here, but the distinction is clear enough, cf. *Probl.* 25.26 (943a3) ὁ γὰρ ὄμβρος χειμῶν ἐστὶν οἰκειότατος τῷ πνεύσαντι πνεύματι. See Bonaventura 417-19. Storms can also be characterized by degree. Thucydides speaks of a χειμῶν νοτερός (3.21), or other words may be employed: λαῖλαψ, ἄελλα, θύελλα, ἐκνεφίας, τυφών; see Gilbert 558 f. Theoretically, then, one should be able to predict a storm that goes beyond mere wind and/or rain.

**38.273 εἰς μὴ καθαρὸν**] The choppiness of this sentence suggests yet another source. Cf. below, 50.365-7 δυόμενος ἥλιος ... εἰς καθαρὸν ... εἰς μὴ καθαρὸν δεδυνκώς. Pindar frequently uses this adjective of light: *P.* 6.14 φάει ... ἐν καθαρχῷ, *P.* 9.90 καθαρὸν φέγγος, fr. 108b S-M σέλας καθαρὸν ἀμέρας. Cf. also Plato *Phdr.* 239c ἐν ἡλίῳ καθαρχῷ.

**38.273-4 ὥς ἂν μερισθῇ**] Wood’s translation, freer than ours, captures the sense: “according as is the proportion of the disc so covered as it sets such will the [following] days turn out.” His bracketing of “following” is unnecessary, as this is implicit in ἐπι-.

**38.275 ἀπολειφθῇ**] This word can mean either “left in” (LSJ I 1) or “left out” (II 3). The mock mathematical tone of this incomplete sentence does not help either. The safest inference is that the more obscured (= the more left *out*) the sun is, the greater the storm will be.



**38.275 σελήνιον]** An uncommon word, which renders it more likely than V's σελήνη. Synesius *Calviti* enc. 10, unnoticed by LSJ, says that bald men were called σελήνια, which suggests a small but *full* moon. [Arist.] *Mira*. 834b3-4 uses it of the moon as a body: ὁ πορθμός ... αὔξεται καὶ φθίνει ἅμα τῷ σεληνίῳ (LSJ overtranslates as “The moon’s phases”). Athen. 7.276e also uses it = σελήνη, LSJ again overtranslating, here as “moonlight.” Dio Chrys. 7.70, however, uses it of a less-than-full moon, which is what must be meant here, as a (symmetrical) full moon cannot be called ὀρθόν.

**38.275-6 ὀρθὸν ἢ μέχρι τετράδος]** The fourth day of the month was a good one for reading the crescent moon for signs; see above on 27.185 ἐὰν δὲ ὁ μῆν. In addition to the passages cited there, note that Pliny *NH* 18.347 f. presents a survey of various views, one of which he attributes to Varro: *si quarto die luna erit directa, magnam tempestatem in mari praesagiet*. And for Nigidius Figulus’ view see further Wachsmuth, *Lydus*, *De Ostentis*, Leipzig 1863, xxiv-xxvi.

**38.276 εὐκνυκλον]** I.e., “clear,” as is shown by Varro’s parallel ap. Pliny *NH* 18.348 *si plenilunio per dimidium pura erit*.

**38.276 γέρανοι]** The flight of cranes must be studied for its shape, size, sound, altitude, direction, and time of appearance, which in various combinations signal storm, winter, or fair weather. Thus, storm is imminent when οὐδ’ ὑψοῦ γεράνων μακραὶ στίχες αὐτὰ κέλευθα | τείνονται, στροφάδες δὲ παλιμπετὲς ἀπονέονται (Arat. 1031 f.). The storm will be severe when γέρανοι ἐκ τοῦ πελάγους ἐς τὴν γῆν πετόμεναι (Arist. fr. 270.21 Gi. = Ael. *NA* 7.7); cf. Ael. *NA* 3.14, cited below. Since, however, cranes are migratory birds whose arrival in fall signals winter (cf., e.g., *Il.* 3.4 f. γεράνων ... αἶ ... χειμῶνα φύγον, Verg. *G.* 1.374 f.), and since, as noted above χειμῶν can be either “winter” or “storm,” one must discern which meaning is intended. Ancient confusion can be seen in the various scholia’s attempts to explain Aristophanes’ χειμῶν ὀρνιθίας (*Ach.* 876 f.) in both ways. Hesiod, in fact, treats the (southward) migration of cranes as a sign of winter and bad weather:

φράζεσθαι δ' εὖτ' ἄν γεράνου φωνὴν ἐπακούσης  
 ὑψόθεν ἐκ νεφέων ἐνιαύσια κεκληγυῖης,

ἦτ' ἄρότοιό τε σῆμα φέρει, καὶ χείματος ὥρην  
 δεικνύει ὀμβρηροῦ.

(WD 448-451)

Cf. Hdt. 2.22.4 γέρανοι δὲ φεύγουσαι τὸν χειμῶνα τὸν ἐν τῇ Σκυ-  
 θικῇ χώρῃ γινόμενον φοιτῶσι ἐς χειμασίην ἐς τοὺς τόπους τούτους,  
 i.e., Egypt; Theogn. 1197-99 ὄρνιθος φωνήν ... ὀξὺ βοώσης | ἦκουσ',  
 ἦτε βροτοῖς ἄγγελος ἦλθ' ἄρότου | ὠραίου. Their voice, which can be  
 heard when they are as far away as two miles or as much as two miles  
 high, described by ornithologists variously as *kruk*, *kurr*, *grooh*, *karoo* (see  
 L. Walkinshaw, *Cranes of the World* [New York 1973] 36, 336) gives the  
 crane its name (Thompson 68, however, says "etymology unknown").  
 According to unknown sources (ὥς φασιν) quoted by Ael. NA 1.44, their  
 squawking was taken not merely as a sign of rain, but as its actual cause:  
 τῶν γεράνων αἱ κλαγγαὶ καλοῦσιν ὄμβρους; cf. Poseidippos *Epigr.*  
 22.3 f. Austin-Bastianini ἡμῖν ... | Θρηῖσσα κατὰ προτόνων ἡγεμονέοι  
 γέρανος, | σῆμα κυβερνητικῇ καταδέξιον, ἥ τὸ μέγ' [ἴσχει] | κῦμα.  
 ([ἴσχει] Sider [εἴσι] eds. prr.), Verg. A. 10.265. The winter migration  
 south of the European crane (*ardea rus* Linn.) occurs throughout Octo-  
 ber and November (Walkinshaw 24), or in Greek, or more specifically  
 Attic, terms τοῦ Μαιμακτηριῶνος (Arist. HA 597a24), and takes them  
 from northern Europe (over Greece, especially Thrace as many but not  
 all veer towards Turkey to keep the mainland beneath) to Ethiopia and  
 Sudan (Walkinshaw 45); cf. further Pliny NH 10.60, S. Cramp et al.,  
*Birds of the Western Palaearctic* 2 (Oxford 1977) 618-626; J. Morton, *The  
 Role of the Physical Environment in Ancient Greek Seafaring* (Leiden 2001)  
 298-301.

In the late hieroglyphic text of Horapollo, the crane becomes the  
 visual symbol of the meteorologist: ἄνθρωπον εἰδότα τὰ μετέωρα θέ-  
 λοντες σημῆναι γέρανον ἱπτάμενον ζωγραφοῦσιν· ἐκεῖνος γὰρ ὑψηλὸς  
 πάνυ ἵπταται, ἵνα θεάσῃται τὰ νέφη, μὴ ἄρα χειμάζει, ἵνα ἐν ἡσυχίᾳ  
 διαμένῃ (2.98 ed. Thissen).

**38.277 πρῶτ' ... ὀψέ]** Most likely, earlier and later in the year than  
 usual, rather than early or late in the day, as in 9.58-60. See above on the  
 confusion between storms and winter.

**38.277 ἄθροαι]** To be more specific, in the classic V-formation of  
 migrating fowl like ducks and geese. LSJ s.v. γέρανος, reading Wimmer's  
 text, which has ἄθροοι here and πετόμεναι in the next sentence, cite this  
 one passage for evidence of ὁ γέρανος. In fact, ἄθροος can be a two-

termination adjective, so that ἄθροοι in itself would not determine gender. (For masc. γέρανος, see instead Epicharmos fr. 76.2 K-A [where ὁ is guaranteed by meter] ἢ παμπόνηρον ὄψον, ὧ 'τᾶν, ὁ γέρανος [the joke here is that the speaker has misheard γ' ἔρανον] and Nonnos 14.332 Θρηικίοις γεράνοισιν.) Similarly at 52.381, V retains the correct feminine ending of πετόμεναι (whixh we emend to read πρὸ ἐαυτῶν). Thus, grammatically, γέρανος' gender is common (κοινόν), not epicene (ἐπίκοινον), such as, e.g. χελιδών, which always has the female article ἡ; cf. Dionys. Thrax 24.8-25.2 Uhlig.

**38.278 ἀποστραφῶσι]** There is no reason to alter the mss. and read ὑπο- with some eds., especially as Aratos seems to have echoed this passage with στροφάδες δὲ παλιμπετὲς ἀπονέονται (1032; see above). (If, however, the codd. presented both readings, choosing would be difficult; cf. Ael. *NA* 3.14 κυβερνήτης ἰδὼν ἐν πελάγει μέσφ γεράνους ὑποστρεφούσας καὶ τὴν ἔμπαλιν πετομένας, συνεῖδεν ἐναντίου προσβολῇ πνεύματος ἐκείνας ἀποστῆναι τοῦ πρόσω.) Cranes ride thermals and will accordingly deviate from a straight course; from shore they may look as though they were turning back; cf. *Il.* 2.459-462 ἔθνεα πολλὰ | χηνῶν ἢ γεράνων ἢ κύκνων δουλιχοδείρων | ... ἔνθα καὶ ἔνθα ποτῶνται. See N. Elkins, *Weather and Bird Behaviour* (Calton 1988) 165, “migration is inhibited by opposing winds and rains, and north-bound cranes in spring are delayed by low temperatures ... . over sea they are influenced by crosswinds. Drifts in thermals can be quite considerable, since the birds must remain with the rising air in order to climb, even though it may be moving in a different direction not in accordance with their heading.” For the idea that cranes flee storms, cf. Eur. *Hel.* 1478-81 (ed. Kannicht)

δι' ἄερος εἴ(θε) ποτανοὶ  
γενοίμεθ' (ὄπ)α Λιβύας  
οἰωνοὶ στολάδες  
ὄμβρον λιποῦσαι χειμέριον.

If the storm ahead is severe they may choose to land; Arist. *HA* 614b19-21 εἰς ὕψος πέτονται πρὸς τὸ καθορᾶν τὰ πόρρω, καὶ ἐὰν ἴδωσι νέφη καὶ χειμέρια, καταπτᾶσαι ἡσυχάζουσιν ~ Antig. *Hist. Mir.* 40 (note the πρὸς: they fly high *in order* to see a long distance; cf. the passage given above from the *Hieroglyphika* of Horapollon), Dionysios *De Aucupio* 2.18 καὶ χαίρουσι ταῖς εὐδαίαις· κἂν χειμῶνος αἴσθοντο, τῇ γῇ προσορμίζονται μέχρι σταθερᾶς πάλιν εὐδίας. See also Plutarch *De*

*Sollertia Animalium* 967b for some observations on the various formations of migrating cranes, depending on weather conditions.

### 39

**39.280 χῆνες]** These geese, unlike the cranes mentioned just above, would be domestic birds, which, although they may migrate silently (with stones in their craw, to discourage cackling, acc. to Ael. *NA* 5.54), raise a ruckus around the barnyard. Cf. Aratos 1021 f. (where again, *pace* Kidd ad loc., they seem to be domestic) καὶ χῆνες κλαγγηδὸν ἐπειγόμεναι βρωμοῖτο | χειμῶνος μέγα σῆμα, *Geop.* 1.3.9 χῆνες μετὰ κλαγγῆς ἐπειγόμεναι πρὸς τροφήν, Pliny *NH* 18.363. In *Natural History* 55 (1946) 343, a reader observes that birds, especially juncos, “would congregate in the yard to fill up on grain we supplied ... . It seemed like the birds almost knew when bad weather was coming.” This was dismissed by J. T. Zimmer, a curator at the American Museum of Natural History in New York (the publisher of this journal), who, however, was happy to add his own personal observation that “*Stomoxys*, the stable fly, ordinarily particularly obnoxious in the evening, becomes troublesome before storms”; cf. Aratos 975. Aratos 1104-12 observes that before a storm sheep are eager to pasture and reluctant to return in the evening.

**39.280 περὶ σίτου μαχόμενοι]** M’s περὶ σῖτον is unlikely, since when, as it often does, μάχεσθαι takes περί, it is always followed by the genitive, as it is again here at 41.302-3; and V’s ἐπὶ σίτῳ is paralleled only by phrases like *Il.* 5.124 ἐπὶ Τρώεσσι μάχεσθαι, “fight *against* the Trojans.” π. σίτων cannot be ruled out, however (for the plural, which is commoner than LSJ lets on cf. Eur. *Alc.* 548, Pl. *Phdr.* 259a, Arist. *Ph.* 230b2).

**39.281 [καὶ στρουθός]** Although this bird may be specifically a sparrow, it also “is often used generically ... of any small birds” (Thompson 268, who cites, i.a., a gloss *fringillus*, σπίνος, ὁ στρουθός). Since the καὶ is missing from several mss. and since the parallel in Aratos mentions only the σπίνος ἡῶα σπίζων (1024), we regard στρουθός as an intrusive gloss later made to fit better with a καὶ in some mss.

**39.281-2 ὀρχίλος ... ἐριθεύς]** Wren and robin, respectively. They are taken together in the same sign also by Aratos 1025 f. καὶ ὀρχίλος καὶ

ἐριθεύς | δύνων ἐς κοίλας ὀχεάς. Only the latter in Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) ἐρίθακος (= ἐριθεύς) δὲ ἐς τὰ αὔλια καὶ τὰ οἰκούμενα παριὼν δῆλός ἐστι χειμῶνος ἐπιδημίαν ἀποδιδάσκων. Conversely, it is a sign of fair weather when the wren comes out of its lair; below, 53.388.

It is conceivable that the ἐριθύς of the codd. preserves a valid variant of ἐριθεύς (cf. ἰχθύς), but –θεύς is what is found elsewhere, although admittedly not often; in addition to Aratos 1025 (above), cf. Schol. Aristoph. *Vesp.* 927 ἔστι δὲ ὄρνεον ὑπὸ μὲν τινων καλούμενον ἐριθεύς, ὑπὸ δὲ ἐτέρων ἐρίθυλος, ὑπὸ δὲ πλειόνων ἐρίθακος, Hesych. ἐριθεύς· ὁ ἐρίθακος.

**39.281 ὥς]** This reads badly but should probably be retained as a poor attempt at correlation with the following καὶ ... ὡσαύτως; cf. LSJ s.v. A b. Similarly awkward is the plural verb, which can just as easily be the fault of a careless compiler as of a scribe.

**39.282 ὁπάς]** See below, 53.388.

**39.283-4 χειμερία ... χειμέριοι]** “Sign(s) of storm,” a meaning unknown to LSJ; sim. Arat. 879.

**39.284 κορώνη καὶ κόραξ καὶ κολοιός]** See above, 16.111 f., for the crow, raven, and jackdaw lumped together. There it was the raven, not the crow who croaks twice (as a sign of rain). Below, 53.387 f., the crow’s croaking thrice quickly signals fair weather; cf. Plut. *Tuend. San.* 129c.

**39.284 ὁψὲ ἄδοντες]** Cf. Arist. fr. 270.21 Gi. (of these three birds) δείλης ὁψίας εἰ φθέγγονται, χειμῶνος ἔσεσθαι τινα ἐπιδημίαν διδάσκουσι. That this is late in the day (not season) is shown by the echo in Aratos 1022 f. κορώνη | νύκτερον αἰίδουσα, καὶ ὁψὲ βοῶντε κολοιοί.

**39.285 λευκός]** Since storms come and go, faster than birds can change color, this must in origin be a sign of harsh winter, the unusual white color presaging greater than usual snow Cf. Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) φανέντες δὲ ὄρνιθες πολλοὶ μὲν τὸν ἀριθμόν, λευκοὶ δὲ τὴν χροάν, χειμῶν ὅτι ἔσται πολὺς ἐκδιδάσκουσι. See Hauser 372 “Quand on voit du canard le jabot se blanchir, et l’hirondelle revenir, le printemps au plutôt se va faire sentir” (Waadtland).

## 40

**40.288 ἐκ πελάγους]** Aristotle, as we have seen (above, on 38.276), said this about cranes; he also generalizes (and, unlike *DS*, explains): ὄρνιθες οἱ μὲν θαλάττιοι καὶ οἱ λιμναῖοι ἐς τὴν γῆν ἰόντες ὥς ἔσται χειμῶν πολὺς οὐκ ἀγνοοῦσιν (Arist. fr. 270.21 Gi. = Ael. *NA* 7.7). The same sign appears earlier in this section as ὄρνιθες δὲ ἐκ τοῦ πελάγους ἐς τὴν γῆν σὺν ὁρμῇ πετόμενοι μαρτύρονται χειμῶνα, which suggests that Aelian was copying from an extensive text.

**40.289 οἰκουμένη]** See above, on 19.126 οἰκουμένη.

**40.289-90 ὅσα ... χειμῶνα]** Not the most pellucid of sentences. Our English intentionally reproduces its awkwardness, but Wood has refashioned nicely: “Whatever indicates rain is followed by storm; and if it is not followed by rain it is followed by snow and storm.” That is, as noted above on 38.273, it stands to reason, even the reason of superstitious country lore, that what signals rain or wind could also portend an excessive amount of these, namely a storm.

**40.290-1 κόραξ φωνὰς πολλὰς μεταβάλλων]** Since, as noted at 16.106-7, the raven has a wide range of sounds, the criterion here must lie not in πολλὰς but in φωνὰς, i.e., either noise vs. silence is the criterion, or else it lies in the particular sounds made. Lucr. 5.1083 ff. suggests the latter: *et partim mutant cum tempestatibus una | raucisonos cantus, cornicum ut saecla vetusta | corvorumque greges etc.* More particularly, cf. 16.106 and Aratos 963-969 (quoted above, on 16.106), where the raven imitates hawks (their screech, most likely) and the sound of raindrops; perhaps too βαρεῖη δισσάκι φωνῇ (968) is meant to be onomatopoeic of thunder. Cf. also Pliny *NH* 18.362 *tempestatem* (sc. *praesagiunt*) *corvique singultu quodam latrantes seque concutientes, si continuabunt; si vero carptim vocem resorbent, ventosum imbrem.*

**40.292 νότου]** Maass *Arati Phaenomena* xxvi conjectured νομοῦ to have this passage conform with Arat. 1026 f. φῦλα κολοιῶν | ἐκ νομοῦ ἐρχόμενα τραφεροῦ ἐπὶ ὄψιον αἶλιν, but what is clear in the latter passage would be vague to the point of meaninglessness if read in *DS*.

**40.292 τευθίδες]** Squids of some sort; see Thompson *GGF* s.v. Cf. Plut. *NQ* 18 (916a-b) διὰ τί τευθίς φαινομένη σημείον ἐστὶ μεγάλου χειμῶνος; ἧ πάντα φύσει τὰ μαλάκια δύσριγα διὰ γυμνότητα τῆς σαρκὸς καὶ ψιλότητα, μήτ' ὀστράκῳ μήτε δέρματι μήτε λεπίδι σκεπομένης ἀλλ' ἐντὸς ἐχούσης τὸ σκληρὸν καὶ ὀστεῶδες, διὸ καὶ κέκληται μαλάκια; ταχὺ δὲ προαισθάνεται δι' εὐπάθειαν τοῦ χειμῶνος· ὅθεν ὁ μὲν πολύπους εἰς γῆν ἀνατρέχει καὶ τῶν πετριδίων ἀντιλαμβανόμενος σημείον ἐστὶ πνεύματος ὅσον οὐπω παρόντος, ἡ δὲ τευθίς ἐξάλλεται, φεύγουσα τὸ ψῦχος καὶ τὴν ἐν βάθει ταραχὴν τῆς θαλάττης· καὶ γὰρ ἔχει μάλιστα τῶν μαλακίων εὐθρυπτον καὶ ἀπαλὸν τὸ σαρκῶδες, Eri-charmos fr. 54 K-A ποταναὶ τευθίδες, Pliny *NH* 18.361 *lolligo volitans*, 32.15, Cic. *Div.* 2.145 *gubernatores cum exsultantis lolligines viderunt ... tempestatem significari putant*, Ael. *NA* 9.52.

**40.292-3 φῶκη ... πολύποδα ἔχουσα]** Edd. from 1541 on have come to read φωνή ... πολύπλοκον ἡχοῦσα, “a voice re-echoing in a harbour and making a confused sound indicates a storm” (Wood), which substitutes an unspecified sound for the (as usual) specific sign, here a seal doing something quite distinct. Seals, moreover, are fond of harbors. (Th. fr. 362A mentions that a seal in threat of being captured vomits its rennet.) It is true that the sound of the sea itself can be read for signs of storms, etc. (cf. Pliny *NH* 18.359 *mare si tranquillum in portu cursitabit murmurabit intra se, ventum praedicat, si idem hieme, et imbrem, litora ripaeque si resonabunt tranquillo, asperam tempestatem, etc.*), but φωνή is used almost exclusively of articulate (usually human) voice, and, as Aristotle nicely puts it for our purposes, φωνὴ καὶ ψόφος ἑτερόν ἐστι (*HA* 535a27 f.). Cronin “Authorship” 332 is sympathetic to φῶκη, but, believing it to be a conjecture of Coray, keeps to the φωνή of Schneider and Wimmer’s text.

**40.292-3 ἀποψοφοῦσα]** Normally used of farts, but not out of place here since the snorts of seals are rather fartlike and they were thought of as smelly animals; cf. *Od.* 4.442 φωκάων ἀλιοτρεφέντων ὀλοώτατος ὁδμή, Aristoph. *V.* 1035 = *Pax* 758 φώκης δ' ὁσμὴν.

**40.293 πολύποδα]** The Greek *polypo(u)s* has a varied morphology, but πολύποδος, -ου, is not one of them; see LSJ s.v. πολύπους (B), Olson-Sens on Archestratos fr. 54.1. Hence read πολύποδ' or πολύποδα. Octopods make good eating; cf. Archestratos loc. cit. = fr. 184 *SH*. They

even occasionally, it was said (e.g., Hes. *WD* 524), nibbled on themselves when hungry; Thompson *Fishes* 207 f.

**40.293-4 πλεύμονες οἱ θαλάττιοι]** “A jellyfish or Medusa; perhaps from its rhythmical pulsation, as if breathing” (Thompson *Fishes* 203), but more likely from its snake-like appendages. Cf. Pliny *NH* 18.359 *pulmones marini in pelago plurium dierum hiemem portendunt*, 32.15, Cic. *Div.* 2.145. πλεύμων came to be spelled πν-, thanks to a false derivation from πνεῦμα (so LSJ and Chantraine), but even as late as the first cent. AD, a *defixio* kept πλεύμων (written twice) distinct from πνεῦμα (four times); *Hesperia* 6 (1935) 383. Moeris p. 309 states that πλεύμων is Attic, πνεύμων Hellenic (i.e., the form in general use), which may have been true in his day (ii c. AD), since the Modern Greek word is πνεύμων.

**40.295 πρόβατα]** Sheep, pigs, and goats, as Aratos (1068-74) spells out:

θήλειαι δὲ σύες, θήλειαι δὲ μῆλα καὶ αἶγες  
ὀππότ' ἀναστρωφῶσιν ὀχῆς, τὰ δέ γ' ἄρσσει πάντα  
δεξάμεναι πάλιν αὖτις ἀναβλήδην ὀχέωνται, 1070  
... μέγαν χειμῶνα λέγοιεν.

ὀψὲ δὲ μισγομένων αἰγῶν μήλων τε συνῶν τε  
χαίρει ἄνολβος ἀνήρ, ὃ οἱ οὐ μάλα θαλπιῶντι  
εὖδιον φαίνουσι βιβαιόμεναι ἐνιαυτόν.

Cf. Arist. *HA* 575b17-19 ὅταν δὲ πολλὰ κύωσι (sc. βόες) καὶ προσδέχωνται τὴν ὀχείαν, σφόδρα δοκεῖ σημεῖον εἶναι καὶ χειμῶνος καὶ ἐπομβρίας, Ael. *NA* 7.8 ἀναβαινόμενα δὲ (sc. πρόβατα) τὰ αὐτὰ πρῶι πρῶιον χειμῶνα ὁμολογεῖ, *Geop.* 1.4.2 καὶ αἶγες καὶ οἶες ὀχευθεῖσαι, καὶ πάλιν ὀχεύεσθαι βουλόμεναι μακρότερον σημαίνουσι χειμῶνα, Anon. *Laur.* 11.5 (goats and pigs). Where *DS* says “early,” Aratos and later texts say “again and again.”

#### 41

**41.297 πρόβατα ἢ βόες ὀρύττωσι]** Cf. Aratos 1082-85

εἰ δὲ βόες καὶ μῆλα μετὰ βρίθουσιν ὀπώρη  
γαῖαν ὀρύσσουσιν, κεφαλὰς δ' ἀνέμοιο βορῆος  
ἀντία τείνωσιν, μάλα κεν τότε χεῖμερον αὐτὰ  
Πληϊάδες χειμῶνα κατερχόμεναι φορέοιεν.



*Geop.* 1.4.3 καὶ ἔάν τὰ βοσκήματα τὴν γῆν κατορύσση, καὶ τὰς κεφαλὰς πρὸς βορρᾶν τείνη, χειμῶνα μέγαν προαγορεύουσιν, Anon. Laur. 11.13, Ael. *NA* 7.8.

**41.299-300 ἐν δὲ τῷ Πόντῳ ... νέμεσθαι]** This sentence is regarded as corrupt by Wimmer, Wood, and Hort, in part because an apodosis is missing, but (punctuating before θᾶπτον) we think that it is no more abrupt than others in this immediate vicinity (and elsewhere in this work). Cf. the passages from Aratos and the *Geoponica* (and the similar ones in Aelian and Anon. Laur.) cited above. Although neither has the business about Pontos and the rising of Arktouros (ca. Sept. 8; above, 2,12-13), Aratos' reference to the later setting of the Pleiades may have been intended as a variation the latter. O. Wenskus, *Astronomische Zeitangaben von Homer bis Theophrast* (Stuttgart 1990) 144 regards ἀνατεῖλαι as an ingressive aorist.

**41.300-01 μᾶλλον ἐσθίοντες]** For this motif, see above on 39.280.

**41.301 ἐπὶ τὸ δεξιὸν κατακλινόμενοι]** Cf. Aratos 1116 κοίτῳ πλευρὰς ἐπὶ δεξιτερὰς τανύσωνται. For the converse, see below, 54.395. The two are combined in Ael. *NA* 7.8 ὅτι δὲ βοῦς, ἔάν μέλλῃ ὕειν ὁ Ζεὺς, ἐπὶ τὸ ἰσχίον τὸ δεξιὸν κατακλίνεται, ἔάν δὲ εὐδία, πάλιν ἐπὶ τὸ λαϊόν, θανμάζει ἢ τις ἢ οὐδεὶς, Anon. Laur. 11.9 f., *CCAG* 8.1.137. This passage of Aelian gathers the most cattle signs; it continues: "And I have also heard the following facts which are calculated to astonish one. If an ox bellows and sniffs the air, rain is inevitable. And if oxen eat copiously and more than is their custom, it portends a storm. When sheep dig the ground with their hoofs, it is likely to mean a storm; and if the rams mount them early in the day, it promises an early storm; and the same when goats lie huddled together. When pigs appear in cornland, they inform us that rain is departing. Now when lambs and kids leap on one another and frisk about, they promise a bright day ... And if beasts of burden gambol and low more than is their custom, it shows that storm and rain are on their way; and if besides, they toss up the dust with their hoof, it signifies the same" (tr. A. F. Scholfield).

**41.302 ὧτα κρούων ὄνος]** An ass producing a cracking noise with its ears? Schneider prefers οὐδας. With no parallel in any of the related sources, this passage remains unclear. κρούω generally means to make a noise by knocking one thing against another.

**41.303-04 προπαρασκευάζονται γάρ]** An explanation! The verb was probably invented by Thucydides but found favor with fourth-century writers (Plato, Aristotle, Xenophon, Isaios).

**41.304 μῦες τρίζοντες καὶ ὀρχούμενοι]** Cf. Aratos 1132 f. (as a sign of storm) μῦες τετριγότες εἴ ποτε μάλλον | εὐῆδιοι ἐσκήρτησαν ἐοικότα ὀρχηθμοῖσιν, Ael. *NA* 7.8 γαλαῖ δὲ ὑποτρίζουσai καὶ μῦες ἐκείναις δρῶντες τὰ αὐτὰ χειμῶνα ἔσεσθαι συμβάλλονται ἰσχυρόν, *Geop.* 1.3.13, Anon. Laur. 12.2, *CCAG* 8.1.137,13.

## 42

**42.305 κύων]** Cf. Arat. 1135 f. κύων ὠρύξατο ποσσὶν | ἀμφοτέροις χειμῶνος ἐπερχομένοιο δοκεύων, *Geop.* 1.3.11 κύνες ὀρύσσοντες τὴν γῆν χειμῶνα δηλοῦσι, Anon. Laur. 11.28.

**42.305 ὀλολυγών]** Cf. above, 15.100, χλωρὸς βάτραχος ἐπὶ δένδρου ἔδων, as a sign of rain, as is Arat. 948 τρύζει ὀρθρινὸν ἐρημαίη ὀλολυγών. This would seem to suggest that here as well as in Aratos we are again dealing with a (tree) frog, but the vague name “cryer” led some ancient scholia to identify this animal with one or another bird (owl, nightingale, swallow) or cicada (cf., e.g., scholl. ad Arat. 948, Theokr. 7.139). For the most part, however, modern commentators favor the identification with the tree frog. Arist. *HA* 536a11 says that the mating cry of a male frog in a pond is an ὀλολυγών (sim. Plut. *Sollert. Anim.* 982e βάτραχοι ... λαμπρύνουσι τὴν φωνήν, ὑετὸν προσδεχόμενοι, Ael. *NA* 9.13 ὅταν δὲ βάτραχοι γεγωνότερον φθέγγωνται καὶ τῆς συνηθείας λαμπρότερον, ἐπιδημίαν δηλοῦσιν ὑετοῦ) and Pliny *NH* 11.172 f., who seems to allude (perhaps indirectly) to the Aristotle passage, says that the male frog was called an *ololygon*, since it made this kind of mating call. Moreover, as Kidd points out, the Aratean context suggests that he too took it as a frog, or at any rate not a bird, since he collects bird signs elsewhere. Other passages where this same question is raised are Theokr. 7.139 (frog acc. to Gow), Euboulos fr. 102 K-A = 104 K (frog, acc. to Hunter ad 104), Nikainetos fr. 1.9 Powell, and Agathias Schol. 5.5 Viansino (*AP* 5.292; most likely a bird). See further S. Oliphant, “ἡ ὀλολυγών—What was it,” *TAPA* 47 (1916) 85-106, Pease on Cic. *Div.* 1.14 (where Cicero translates Aratos’ ὀλολυγών as *acredula*); F. Harder, “*Acredula*, ὀλολυγών,” *Glotta* 12 (1923) 137-144, H.

White, *Studies in Theocritus and other Hellenistic Poets* (Amsterdam 1979) 9-16.

**42.306 ἀκρωρείας]** See above, on 21.140.

**42.306 γῆς ἔντερα]** Why our prosaic text should suddenly employ a kenning may seem a mystery, as perhaps kennings were in origin meant to be; see I. Wærn, *Γῆς ὅσπεα: The kenning in pre-Christian Greek poetry* (Uppsala 1951) 70-74; 44 on γῆς ἔντερα. More likely, the term originated among farmers (see West on Hes. *WD* 524 ἀνόσπεος) and in this case became a rather well known nickname, one found also in Arist.; cf. *IA* 705a27, 709a28, *GA* 762b26 (eel larvae? see Thompson *Fishes* 59), *HA* 570a16, in all of which Aristotle apologetically says καλούμενα *vel sim.*, as does Aratos 958 f. πλαζόμενοι σκώληκες | κεῖνοι, τοὺς καλέουσι μελαίνης ἔντερα γαίης, Pliny *NH* 18.364 *vermes terreni erumpentes*, Hesych. s.v. γαφάγας (a Syracusan word). Note also the didactic poem of Noumenios of Herakleia, which explains the term as clearly as possible: οἱ μὲν ἱουλοι | κέκληνται, μέλανες, γαιηφάγοι, ἔντερα γαίης (*SH* 584.2 f.). But *DS* (like Nikandros *Ther.* 388) feels free to use the kenning without further explanation. Two illustrated medieval mss. depict them as worms (clearly distinct from the snakes illustrated elsewhere in each ms.): Morgan M.652 f.201<sup>v</sup>, Vat. Chis. 53 (F vii 159) f.231<sup>v</sup>; see Z. Kádár, *Survivals of Greek Zoological Illuminations in Byzantine Manuscripts* (Budapest 1978), plates 66.2, 86.3.

**42.307-08 πῦρ ... λύχνος]** An open fire vs. an oil lamp, the former most likely the hearth fire, the igniting of which was tended to by the male head of the household; cf. Aisch. *Ag.* 1435 f. ἕως ἂν αἴθῃ πῦρ ἐφ' ἐστίας ἐμῆς | Αἴγισθος. On lamps see on 13.89 and 14.91.

**42.308 τέφρα]** Probably the build-up or hardening of white ash presages the white snow to come, just as a greater than usual number of white birds does. Cf. Aratos 1037 f. δὴ γὰρ καὶ ἀεικέϊ τέφρῃ | αὐτοῦ πηγνυμένη νιφετοῦ ἐπιτεκμήραιο, Pliny *NH* 18.358 *cum cinis in foco concrescit*.

**42.309 νιφετὸν σημαίνει]** Since νιφετός is a noun, not an adjective, V's verb is necessary.

**42.309 λύχνος]** The mss. have λυχνίας, elsewhere only attributed to Plato Comicus (fr. 159 K-A) by Pollux as a kind of stone, but since stones (coal excepted) do not burn (καϊόμενος), alteration of the text was called for.

**42.309 εὐδίας ἡσυχῇ]** As it stands in the mss., a lamp burning gently (ἡσυχᾶς) during calm weather signals a storm, which is not likely (unless one allows for the banal fact that sooner or later a storm will follow anything). Our conjecture is suggested by Aratos 1035, whose context replicates that of this chapter, πῦρ αὔηται σπουδῇ (= with difficulty) καὶ ὑπεύδια λύχνα. For ἡσυχῇ = “slightly,” especially with participles, cf. Th. *HP* 3.14.1 φύλλον ... περιγεχαραγμένον ἡσυχῇ, “slightly jagged,” Plut. *Alex.* 4 ἡ. κεκλιμένος. At 54.398 ἡσυχᾶς can stay. LSJ s.v. ἡσυχᾶς conjecture ἡσυχᾶον (adverb).

**42.310 καὶ ἐὰν μέλαιναι φλόγες αἰθύσσωσι χειμέριαι]** Omitted by all printed editions. Echoed by Aratos, however, shows that it is original: 1034 φλόγες αἰθύσσωσι μελαινόμεναι λύχνοι; cf. *Geop.* 1.3.9 = Anon. Laur. 11.34 λύχνου φλόγες μελαινόμεναι. Kidd, knowing *DS* only from printed editions, reasonably defended the variant μαραινόμεναι found in some mss. of Aratos, but now that “dark” in *DS* and Anon. Laur. chronologically brackets Aratos, μελαινόμεναι should be read in Aratos too. “Dark” (see above, on 22.153) presumably means “not bright, dim,” so that μαραινόμεναι is not only an easy paleographical error, it is nearly synonymous with the true reading.

**42.311 μύκαι]** See 14.91, 34.248, 54.399.

### 43

**43.314 Ὦνου Φάτνη]** If dark alone, a sign of rain; if “drawn up” as well, a sign of storm. The atmospheric conditions that presage storm obscure the spaces within the diffuse nebula, making it appear more compact; cf. Parmenides 28 B 2.4 f. for the implied opposition, οὔτε σκιδνάμενον ... οὔτε συνιστάμενον.

**43.315 ἀστραπή ... μὴ ἐν τῷ αὐτῷ]** Cf. 21.138 ἀστραπαὶ ... πανταχόθεν, another way of saying the same thing, this time as a sign of rain. For the thought spelled out in detail, cf. Aratos 933-937

αὐτὰρ ὅτ' ἐξ εὐροιο καὶ ἐκ νότου ἀστράπτῃσιν,  
 ἄλλοτε δ' ἐκ ζεφύροιο καὶ ἄλλοτε πὰρ βορέαο,  
 δὴ τότε τις πελάγει ἔνι δειδίε ναυτίλος ἀνὴρ,  
 μή μιν τῇ μὲν ἔχῃ πέλαγος τῇ δ' ἐκ Διὸς ὕδωρ·  
 ὕδατι γὰρ τοσσαίδε περὶ στεροπαὶ φορέονται.

935

Verg. *G.* 1.370-373, Pliny *NH* 18.354, *Geop.* 1.3.3.

**43.316 λάμψη παρὰ]** λήψη (and, in the following clause καταλήψη) cannot stand; (—)λάμψη makes immediate sense. Poetry can get away with using the simplex of this verb in a transitive sense (although even this is not straightforward; see Kannicht on Eur. *Helen* 1311), but ordinary prose needs a preposition here. κατὰ, favored by eds., is reasonable in light of the following complex, but we prefer the paleographically more attractive παρὰ, with the same sense (haplography with Πάρνηθα).

**43.316-17 Πάρνηθα καὶ Βρίλλητον καὶ Ὑμηττον]** All visible from Athens. “Parnes [1413 m high] lies 13 miles due N. of Athens and is the eastern ... point of the range running east and west, which separates Boeotia from Megaris and Attica. Brilettus [1110 m high] lies about the same distance to the N.E ... . This range attains an elevation of 3,636 feet, and is more generally known as Pentelicus ... . Hymettus [1027 m high] ... lies five miles to the S.E” (Wood 69 n. 52). Sokrates tells Strepsiades that the Cloud chorus is on their way from Mt. Parnes: βλέπε νῦν δευρὶ πρὸς τὴν Πάρνηθ'· ἤδη γὰρ ὁρῶ κατιούσας | ἡσυχῇ αὐτάς ... . χωροῦσ' αὐταὶ πάνυ πολλαὶ | διὰ τῶν κοίλων καὶ τῶν δασέων (*Clouds* 323-325). As was mentioned above, on 3.17, ὄρη, mountains were often associated with weather (and their signs). Pausanias 1.32.2 records that on Mt. Parnes there was an altar of Zeus Σημαλέος, the god of signs; and that on Mt. Hymettos there was a statue of Zeus Ὀμβριος.

**43.317 ἅπαντα]** Cf. ὅλως below. It looks as though someone took Phaeinos' observations from Mt. Lykabettos (above, 4.25) and those of two other observers located near Mts. Athos and Olympos, and then generalized from the particular. There is a similar generalization involving Mt. Athos at 34.244 f.

**43.320-1 ὅλως ὁρέων κορυφαί ... χεიმέριον]** See the Archilochos fragment cited below, 45. But when the clouds have cleared it is a sign of

fair weather; cf. *CCAG* 4.4.110 (text above, p. 28), which offers several ways to “read” mountain tops.

**43.322-3 γενομένης ... οὐπω]** The rainstorm has stopped where the observer is, but, as the cloud shows, it is not yet over.

**43.323 τιλλόμενον]** Since clouds are visually comparable to sheep (see above, on 13.81), “plucked” is probably the metaphorical sense here; cf. *P.Cair.Zen.* 4.33 (iii b.c.) for the plucking rather than the more usual shearing of sheep. Aratos 1014 essentially offers the same sign of storm in litotes: οὐδέ ποθεν νεφέλαι πεπιεσμένοι ἀντιόωσιν. The clouds described here are probably cirrus fibratus, high clouds that do in fact often precede storms; see Dunlop 70, Ludlum 38.

#### 44

The attempts to correlate the nature of the seasons in this chapter are reminiscent of some in Hipp. *Airs Waters Places*, e.g., 10 ἦν δὲ ὁ μὲν χειμὼν αὐχμηρὸς καὶ βόρειος γένηται, τὸ δὲ ἤρ ἔπομβρον καὶ νότιον, ἀνάγκη τὸ θέρος πυρετῶδες γίνεσθαι καὶ ὀφθαλμίας καὶ δυσεντερίας ἐμποιεῖν. The last clause gives the medical consequences that are Hippokrates’ ultimate concern; all that *DS* offers along these lines is the famine suffered by the πρόβατα. Cf. also Pliny *NH* 18.351, and below, cc. 48, 56. *DS* names five seasons in this chapter: μετόπωρον, χειμὼν, ἔαρ, θέρος, ὁπώρα.

**44.326 ἔαρ οὐ γίνεται]** The opposite of a καλὸν ἔαρ are conditions like those of the preceding cold season or those of the following hot one; hence, as in English, one can say that “we had no spring this year.” Wimmer’s conjecture is unnecessary.

**44.328 σκωρία γίνεται ἐπιεικής]** The mss. present an altogether odd sentence: “If the dross [the only definition given for σκωρία by LSJ] becomes fitting/suitable, there will usually be hunger among the cattle.” Bart. translates as *erubigo*, a post-classical word evidently meaning a “shameful thing,” which suggests that Bart. understood the word’s semantic field to be that of σκῶρ, “dung.” This reasonable interpretation would now have the farmer reading the cattle’s dung for signs of their future health, but this would not be a weather sign. Changing σκωρία to

ὁπώρα or ἔαρ (the first more attractive paleographically) takes care of (i). Schneider printed σκωρία, but still recognized the problem of (ii): “Ipsa observatio obscura est propter dubiam vocabuli ἐπιεικῆς significationem” (2.602). I.e., to rephrase our question above, Why would anything *appropriate* signal something bad like famine? A quick and easy solution is to insert a μή in the protasis or read ἀνεπιεικῆς (and then extend its semantic range [“unreasonable, unfair,” LSJ] to mean “unseemly”). After this not very admirable alteration, however, we would still have a sentence that not only offers too vague a sign (an unsuitable season), but one that stands out in *DS* in not predicting weather but a possible consequence (famine) of this unsuitable season. Crucifixion seems the safest course.

## 45

**45.332 πρῖνοι]** This one Greek word describes (at least) two distinct varieties of trees, the holm oak (*Quercus ilex*) and the kermes (or holly) oak (*Q. coccifera*). Th. describes the varieties of oaks (δρῦς) at *HP* 3.5.2-7, nearly all of which (the ἄσπρις is said to be an exception) bear fruit, but one of these does he call πρῖνος, which in fact he explicitly distinguishes from the oak at 3.16.1: ὁ δὲ πρῖνος φύλλον μὲν ἔχει δρυῶδες, ἔλαττον δὲ καὶ ἐπακανθίζον, τὸν δὲ φλοιὸν λειότερον δρυός. αὐτὸ δὲ τὸ δένδρον μέγα, καθάπερ ἡ δρῦς ... . καρπὸν δὲ ἔχει βαλανώδη· μικρὰ δὲ ἡ βάλανος ... . φέρει δὲ παρὰ τὴν βάλανον καὶ κόκκον τινὰ φοινικοῦν. Here Th. may be describing the holm oak, which can attain a height of ca. 15 m, whereas the kermes oak is “usually encountered as a low impenetrable holly-like bush ... . If left undisturbed, holly oak can grow into a small tree, but trees are only occasionally seen in the wild” (Polunin, *Trees and Bushes of Europe* [London 1976] 54). The fruit of both holm and kermes oaks is called ἄκυλος. All this is enough to distinguish these trees for modern readers in general, but not enough to tell us which tree is intended in *DS*, but as both are evergreen we follow Kidd in so translating. Cf. Aratos 1047 f. πρῖνοι μὲν θαμνιῆς ἀκύλου κατὰ μέτρον ἔχουσαι | χειμῶνός κε λέγοιεν ἐπὶ πλέον ἰσχύσοντος, *Geop.* 1.4.1 πρῖνοι καὶ δρυῖς τὸν καρπὸν πολὺν φέρουσαι ἐπὶ πλέον ἔσσεσθαι τὸν χειμῶνα δηλοῦσι, combines the two broad varieties of oaks; sim. Anon. Laur. 11.47. See below, 49.357. See further Polunin *op. cit.* 52, 55 f., 199. For a survey of plants as weather signs, see McCartney, *CW* 17 (1924) 105-108.

**45.332 σφόδρα]** Often combining with a form of πολύς, “very many” (Wood; LSJ I 2), although Aratos (and his two Greek followers; see above) may be justified in taking it with χειμών; cf. Arist. *HA* 599a19 ἐν τοῖς σφόδρα ψύχεσιν καὶ ἐν ταῖς σφόδρα ἀλέαις (LSJ I 3).

**45.333 ἐπὶ κορυφῆς ὄρους νέφος]** Cf. Pliny *NH* 18.356 *cum in cacuminibus montium nubes considens, hiemabit*, where, note, nothing is said about the cloud’s standing upright, which, if not a notion deriving directly from the Archilochos passage, may be a description of towering cumulus clouds, which build up with much moisture before storms (Kahl 69).

**45.334 Ἀρχίλοχος]** This trochaic passage (fr. 105 West) is quoted most fully by Herakleitos *Alleg. Hom.* 5.2, who not only completes the third line (with κιχάνει δ’ ἐξ ἀελπίτης φόβος), he also, along with Plutarch, provides a word after ἄκρα, which is most likely Γυρέων (which is missing from *DS*; the mss. in the other sources are not in agreement). The Γύραι are a possible name for the peaks on Tenos, visible from Archilochos’ Paros, as well as from Delos, where Cicero wrote of them with an allusion to Archilochos (see below); see F. H. Sandbach, “Ἀκρα Γυρέων once more,” *CR* 56 (1942) 63-65. D’Arcy W. Thompson, “Archilochus, fr. 56,” *ibid.* 55 (1941) 67, had argued for reading ἄκρα γ’ οὐρέων, but we suspect that the second word here was omitted intentionally in *DS* precisely because it was a proper name and thus detracted from the general message that the author wanted to find. J. S. Clay, “ΑΚΡΑ ΓΥΡΕΩΝ: Geography, allegory, and allusion (Archil. fr. 105 W),” *AJP* 103 (1982) 201-203, agrees with C. M. Bowra, “Signs of storm (Archil. fr. 56 [D]),” *CR* 54 (1940) 127-129, that there is an allusion here to the Γυραῖν πέτρῃ of Hom. *Od.* 4.500 ff., where the lesser Aias met his death, and hence—Clay’s point—Archilochos’ reference is only a literary allusion and the Γύραι are not to be looked for on any map of the real world. See also M. Durán, “Los ἄκρα ἄγυρέων y la berrachera simpático en el fr. 105 W de Arquíloco,” *Faventia* 23 (2001) 41-49.

On the phenomenon in question Sandbach aptly quotes from K. G. Fiedler, *Reise durch alle Theile des Königreiches Griechenland* (Leipzig 1841) 2.256: “An dem hohen Felsenkamme sammeln sich bei übrigens heiterem aber stürmischen Wetter Wolkendünste und bilden starken Nebel, aber nur so weit bis sie die höchsten Kuppen verlassen, dann lösen sich die schnell darüber gejagten Dünste wieder auf zu klarer Luft.



Zeigt Tschiknia ein umnebelt Haupt, so sucht der Schiffer einen Hafen zu erreichen, denn stärker und stärker wird der Sturm, bis Tschiknia klar wieder zum Himmel schaut.” (Herakleitos reads the Archilochos passage as a political allegory, but all we care about here is the primary meteorological level.) E. Maass, *Aratea* (Berlin 1892) 355 thought that Aratos 920 νεφέλη ὄρεος μηκύνεται ἐν κορυφῇσιν derives from the Archilochos passage, a suggestion that Kidd passes over in silence.

The complete fragment of Archilochos 105 W runs as follows:

Γλαῦχ' ὄρα· βαθὺς γὰρ ἤδη κύμασι τaráσσεται  
πόντος, ἀμφὶ δ' ἄκρα Γυρέων ὀρθὸν ἴσταται νέφος,  
σῆμα χειμῶνος, κιχάνει δ' ἐξ ἀελπίτης φόβος.

*DS* paraphrase the beginning of v. 4, which is given correctly by Herakleitos and Plut. *De Superst.* 8.169b. ἄκρα rather than *DS*'s ἄκρας is guaranteed by meter and Cic. *Ad Att.* 5.12.1 *omnia* ἄκρα Γυρέων *pura*.

**45.336 ὁμόχρως ἦ ὑμένι λευκῶ]** Sc. νεφέλη, which Furlanus (aprob. Schneider) printed. ὁμόχρως, no doubt the correct reading, is used by both Arist. (*HA* 749a22) and Th. (*HP* 9.4.10 [a likely conjecture for ὁμόχρω] and *De Sens.* 37 τὴν ὄψιν ὁμόχρων ποιεῖ τῇ νυκτί). This last passage also shows how to construe ours: “like in color to a white membrane.” (Hort wonders unnecessarily whether “ὁμοῖον has perhaps dropped out after ὁμόχρων.”) Any smooth covering can be called a ὑμήν, even one made of metal (cf. LSJ s.v.) Here the reference may be to cumulonimbus clouds, which “are huge masses of liquid and solid water . . . . Strong winds that flow over the tops of these clouds can freeze into a saucer-shaped cloud” (Kahl 71, with photo), which is called a pileus by the meteorologists but which could easily have been described by a Greek as a membrane.

ὁ πομοχρως in the codd. probably arose when a scribe meant to cancel the word misspelled ομοχρως, which was ignored by a later scribe. We owe this suggestion to Maria Vasiloudi.

**45.337 ἐστῶτων νεφῶν ἕτερα ἐπιφέρηται]** It is, as the grammar does not quite make clear, the moving not the stationary clouds that bring rain. They are the “floating clouds” Th. fr. 192 describes: τὰς ὑπόμβρους μάλιστα καὶ περιφερομένας ἐκάλουν πλωϊάδας, ὡς Θεόφραστος ἐν τετάρτῃ *Περὶ μεταρσίων* εἶρηκε κατὰ λέξιν, “ἐπεὶ καὶ αἱ πλωϊάδες αὗται νεφέλαι καὶ αἱ συνεστῶσαι, ἀκίνητοι δὲ καὶ τοῖς χρώμασιν ἔκλευκοι, δηλοῦσι διαφορὰν τινα τῆς ὕλης, ὡς οὐτ' ἐξυδατου-

μένης οὐτ' ἐκπνευματουμένης” (to make sense, the “matter” of the last clause must refer only to that of the stationary clouds). And just as the Theophrastos passage helps us understand this one; it is *DS* that helps us see more clearly that these clouds “float” in relationship with other, “stationary,” clouds. Cf. Aratos 1018-20 (expect storm) ὁππότε ται μὲν ἔωσιν | αὐτῇ ἐνὶ χώρῃ νεφέλαι, ται δ' ἄλλαι ἐπ' αὐταῖς, | ται μὲν ἀμειβόμεναι, ται δ' ἐξόπιθεν, φορέωνται. The situation described here can occur when air is both rising and sinking, bringing two types of clouds together in the sky before a thunderstorm; Kahl 85.

## 46

**46.338 ὁ ἥλιος]** There's a problem here. These words are missing in Bart. and the Aldine and appear as οὐ in V, an odd assortment, considering that Ald.'s exemplar H must have had it, since it appears in H's exemplar P and in H's descendant C, as well as in all other mss. except L, which derives from Ald. (Grynaeus marks the omission with an asterisk; Schneider and Wimmer print ὁ ἥλιος in brackets, i.e., as though this were an editorial insertion.) This cannot, it seems, be another place where a printer's inkblot had obscured the Greek; see above, on 34.244. None of Aratos' many sun signs (819-891) matches this one. No ms. affiliation can explain this. It may be the case that DS's original was ὁ μῆν, which, as often happens (as in fact it does elsewhere in some mss. of *DS*) an archetype for all mss. (including Bart.'s exemplar) had written with a symbol for the moon: “ὁ ).” This, if corrupted early, would explain its loss in Bart. and V's οὐ. Its corruption, furthermore, led to something illegible or otherwise incomprehensible, and then to the scribe of M or a predecessor supplying what must have seemed a reasonable conjecture, sun rather than moon. So far, so good. What remains to be explained is its loss in Ald., for which we are forced to rely on a most unlikely coincidence, that once again, as at 34.244, ink hid what H had, and this was the very word lost to the tradition earlier. And if so, where did Furlanus, who did not go back to M to get the correct “Athos,” come up with ὁ ἥλιος? Did he guess and come up with it by guess work, just as we are, for the sake of argument, are imaging that M or an ancestor did?

**46.339 Ἐρμοῦ ἀστήρ]** Since nobody needs sight of the planet Mercury to know that winter will be cold and summer hot, the notion of “excessive” cold and heat is perhaps implicit. Aratos has no use for any

of the planets, dismissing them in a few lines (454-461). When he says οὐδ' ἔτι θαρσαλέος κείνων ἐγώ (460), he really means that he could find little on them in earlier literature useful for his purposes (including the predicting of weather). This passage provides the strongest link to Theophrastos' *De Signis*, for in Th. fr. 194 we learn that the Chaldaeans made predictions about individuals and not only meteorological phenomena, which affect many people in common; e.g.: τὸν ἀστέρα τοῦ Ἑρμοῦ χειμῶνος μὲν ἐκφανῇ γενόμενον ψύχῃ σημαίνειν, καύματα δὲ θέρους εἰς ἐκάστους ἀναπέμπειν· πάντα δ' οὖν αὐτοὺς (τοὺς Χαλδαίους) καὶ τὰ ἴδια καὶ τὰ κοινὰ προγινώσκειν ἀπὸ τῶν οὐρανίων ἐν τῇ *Περὶ Σημείων* βίβλῳ φησὶν ἐκεῖνος (Proklos *In Pl. Tim.* 40cd), where note that once again that one wants to insert the word "excessive" twice; see Regenbogen 1412-15. As Cronin "Authorship" 310 notes, however, the work alluded to by Proklos in fr. 194 clearly had a wider scope than *DS*.

Mercury as a weather sign is most fully discussed in Germanicus Caesar *Aratea* fr. 4.110-136. Cf. also Pliny *NH* 11.37; R. Böker, *RE* Supplb. 9 (1962) 1643 f., McCartney *CW* 27 (1933) 25 f. On the Chaldaeans' use of Mercury in predictions, see P. Kingsley, "Meetings with Magi: Iranian themes among the Greeks, from Xanthus of Lydia to Plato's Academy," *J.Roy.Asian Soc.* 3.5,2 (1995) 205-207, who cites references in Mesopotamian astrological literature to the predictive nature of the appearance (φαίνόμενος, prob. the heliacal appearance) of Mercury.

**46.341 μέλιτται]** Cf. Arist. *HA* 627b10-13 προγινώσκουσι δὲ καὶ χειμῶνα καὶ ὕδωρ αἱ μέλιτται· σημεῖον δέ, οὐκ ἀποπέτονται γὰρ ἀλλ' ἐν τῇ εὐδίᾳ αὐτοῦ ἀνειλοῦνται, ᾧ γινώσκουσιν οἱ μελιττουργοὶ ὅτι χειμῶνα προσδέχονται. Aratos 1028-30

οὐδ' ἂν ἔτι ξουθαὶ μεγάλου χειμῶνος ἰόντος  
 πρόσσω ποιήσαιντο νομὸν κηροῖο μέλισσαι,  
 ἀλλ' αὐτοῦ μέλιτός τε καὶ ἔργων εἰλίσσονται,

Ael. *NA* 5.13 οἷδε δὲ ἄρα ἡ μέλιττα καὶ ὑετοῦ ἀπειλοῦντος ἐπιδημίαν καὶ σκληρὸν πνεῦμα ἐσόμενον, Verg. *G.* 4.191-194, Pliny *NH* 11.10, 18.364. If by ἐν τῇ εὐδίᾳ *DS* means that when bees do not stray far in fair weather a storm is on the way, the phrase would have better been placed earlier in the sentence. It is clear, however (and illustrative of the way in which *DS* was compiled) that the sentence derives from Aristotle (or a closely related source), where the reversed word order, ἐν τῇ εὐδίᾳ αὐτοῦ, is somewhat clearer (but note that D'Arcy W. Thomp-

son thought it necessary to translate freely to bring out the sense: “*even* while it is *as yet* fine ... within a restricted space”; emphasis added). On αὐτοῦ, “here,” it should be noted that in the context of a work on weather signs such a phrase is not needed and in fact rarely stated; moreover, and more significant, it is only the immediate context (especially in contrast to μακράν) that directs us to understand αὐτοῦ in the specific sense “home”; cf. Pliny *NH* 18.364 *apes conditae*. Elsewhere (not excluding Aratos; see below), the word needs further specification of location, whether thanks to context (as in the Aristotle passage, where the word “home” appeared in the preceding sentence), with an adverb alone (ἐνθα(δε), κεῖθι, τῇ, ταύτῃ), or with a prepositional phrase (τῷδ' ἐνὶ χώρῳ, κατ' οἴκους, περὶ τεῖχος—all exx. taken from the entry s.v. in LSJ). (In spoken dialogue, it may appear alone because the speaker's location provides all the information needed to know where “here” is; e.g., Eur. *HF* 1397 αὐτοῦ γενοίμην πέτρος.) What about Aratos? According to Kidd, who takes μέλιτός τε καὶ ἔργων with εἰλίσσονται, he uses αὐτοῦ in the same bare sense as in *DS*. We think, however, that he is mistaken to compare εἰλίσσονται to the two forms of πονέομαι that take genitives in two passages in Aratos (82, 758), and that Aratos has based his line on something like *Od.* 4.639 αὐτοῦ ἀγρῶν, with μέλιτός τε καὶ ἔργων as hendiadys for “The place where the honey is worked,” i.e., the hive. If this is so, ἐν τῇ εὐδίᾳ could well be a corruption of a phrase meaning “near the hive.”

**46.341 ἐν τῇ εὐδίᾳ]** Note below 47 ἐν τῷ μετοπώρῳ, an odd construction for *DS*, both examples probably taken from the same source.

**46.342 λύκος ὠρνόμενος]** Cf. Aratos 1124–28

καὶ λύκος ὅπποτε μακρὰ μονόλυκος ὠρύηται,  
ἢ ὅτ' ἀροτρήων ὀλίγον πεφυλαγμένος ἀνδρῶν  
ἔργα κατέρχεται, σκέπαος χατέοντι ἰοικῶς  
ἐγγύθεν ἀνθρώπων, ἵνα οἱ λέχος αὐτόθεν εἴη,  
τρίς περιτελλομένης ἡοῦς χειμῶνα δοκεῖν.

A significant difference in Aratos is that the wolf comes to farmland not for food, as seems implicit in *DS*, but, rather unrealistically, for shelter. In addition, Aratos' amalgamation of the two wolf sentences produces only one sign, storm within three days. Cf. Ael. *NA* 7.8 λύκοι δὲ φεύγοντες ἐρημίας καὶ εὐθὺ τῶν οἰκουμένων ἰόντες χειμῶνος ἐμβολὴν μέλλοντος ὅτι πεφρίκασι μαρτυροῦσι δι' ὧν δρῶσι, *Geop.* 1.3.11, *CCAG* 8.1.138.11 = Anon. Laur. 11.30.

**46.343 τριῶν ἡμερῶν. λύκος]** The Aldine's alteration greatly improves the sense of the second wolf sentence and provides a balance between the two, τριῶν ἡμερῶν ending the first and εὐθύς the second.

**46.343-4 εἰσίη χειμῶνος ὥρῃ]** Phrased thus to distinguish “winter” from “storm.” The ἦ of the codd. after this phrase may be due to a scribe who, taking εἴσω χειμῶνος as “within the winter,” wanted to contrast this with εὐθύς, but εἴσω + gen. to indicate time is late (LSJ s.v. εἴσω II). The odd contrast between πρὸς τὰ ἔργα and εἴσω led Schneider (approb. Maass *Arati Phaenomena* xxvi) to emend the latter to εἰσίη, now in contrast with ὁρμῇ. The sense remains exactly the same.

#### 47

**47.346 σφήκες]** Cf. Aratos 1064-67:

αὐτὰρ ὅτε σφήκες μετοπωρινὸν ἤλιθα πολλοὶ  
πάντη βεβρίθωσι, καὶ ἔσπερίων προπάροιθε  
Πληϊάδων εἴποι τις ἐπερχόμενον χειμῶνα,  
οἷος ἐπὶ σφήκεσσι ἐλίσσεται αὐτίκα δῖνος.

Since Aratos' wasps signal the onset of winter (see Kidd), we may assume that this is another place where *DS* has confused the two meanings of χειμῶν.

**47.346 ὄρνιθες λευκοί]** Cf. Pliny *NH* 18.363 *hiemem et albae aves cum congregabuntur*, Anon. Laur. 11.37 ὄρνιθες λευκοὶ καὶ πολλοὶ φανέντες χειμῶνα δηλοῦσι ~ *CCAG* 8.1.138.17. What are these white birds? Hort suggests “gulls, etc.”; Rackham (in the Pliny Loeb) “perhaps egrets.” Their presumably unusual appearance in cultivated fields (inland) does suggest shore birds, but this sign may be a variant of that found in 17.116, where birds identified not by species or color but simply as those escaping the islands for the mainland signaled rain; notice that in his allusion to the passage at 17.116 Aratos 1094-96, although not mentioning white birds (which he never refers to) adds a reference to farms: οὐδὲ μὲν ὄρνιθων ἀγέλαις ἡπειρόθεν ἀνήρ | ἐκ νήσων ὅτε πολλαὶ ἐπιπλήσσωσιν ἀρούραις | ἐρχομένου θέρεος, χαίρει.

**47.348 τὰ ἐργάσιμα]** Originally sc. χωρία, as in Pl. *Leg.* 639a, [Arist.] *Probl.* 924a1; Xen. *Cyr.* 1.4.16 and *Cyn.* 5.15 have the shortened phrase.

**47.348 σπεύδοντα]** It may be that this is an error for σπεύδουσι, but there are parallels for participle + καί + finite vb. (usually in this order) in *main* clauses; cf. Hdt. 1.116 καὶ κατέβαινε ἐς λιτάς τε καὶ συγγνώμην ἐωυτῷ κελεύων ἔχειν αὐτόν, Xen. Cyr. 1.3.1 ἔρχεται αὐτὴ τε ἡ Μανδάνη πρὸς τὸν πατέρα καὶ τὸν Κῦρον ... ἔχουσα. For other examples of dangling participles in *DS*, see above, on 1.5 ἃ μὲν ... λαβόντες, 30.210 ὁδᾶξῶν.

**47.349-50 Πάρνηθος ... νέφεσι]** Visible from Athens, as in Aristoph. *Clouds* 323-325 (quoted above, on 43.317-18). See G. V. Lalonde, "Topographical notes on Aristophanes," *Hesperia Suppl.* 20 (1982) 80 f., who notes the connection between Mt. Parnes, clouds, and bad weather in the first version of the *Clouds*: Aristoph. fr. 394 K-A ἐς τὴν Πάρνηθ' ὀργισθεῖσαι φροῦδαι κατὰ τὸν Λυκαβηττόν, as well as in the schol. ad *Nu.* 323 πᾶσαι γὰρ αἱ τῶν ὀρέων κορυφαὶ διὰ τὸ ὕψος αἰεὶ συννεφεῖς φαίνονται.

**47.349 Φύλης]** An Attic town on the road to Thebes, between Mts. Parnes and Kithairon. Since it lies somewhat SW of Parnes, the two καί-clauses should be understood as hendiadys, or, at the very least, the second one acting exegetically of the first. The passes between these two mountains are 600-900 m above sea level, and the mountains themselves are ca. 1430 m high; see M. Cary, *The Geographic background of Greek and Roman history* (1949) 73-75, with map.

#### 48

**48.351 πνίγη]** "Hot spells": cf. *Probl.* 910a5 f. πνίγη σφοδρὰ γίνεται πολλά.

**48.351 γίνηται ... ἰσχυρῶς]** For exx. of copulative vbs + advn., cf. Homer *Il.* 9.324 κακῶς δέ τέ οἱ πέλει αὐτῇ, Parm. 28 B 1.32 δοκίμως εἶναι, 8.11, πάμπαν πελέναι, Emped. 31 B 4 κάρτα πέλει; Chantraine, *Grammaire homerique* 2.9.

**48.351 ἀνταποδίδωσι]** The recompense described here is a specific instance of the balance of polarities found throughout Greek thought; see G. E. R. Lloyd, "Hot and cold, dry and wet in early Greek thought," *JHS* 84 (1964) 92-106; repr. in D. Furley & R. E. Allan (eds.), *Studies in Presocratic philosophy*, vol. 1 (London 1970) 255-280.

## 49

**49.357** **πρῖνοι]** See above, 45.332.

**49.359 σπάλακα]** An interesting choice of variants, each an unusual animal. Although there is no parallel passage in the literature on weather signs to help us decide, we go with the reading of V alone, which is the more common of the animals. The (ἀ)σπάλαξ, the blind-rat (*Spalax typhlus*), which is a kind of mole best known for its poor sight (τυφλό-τερος ἀσπάλακος, Diogenianus 8.25; Arist. *HA* 533a1 ff. gives the ἀσπάλαξ as his first instance of an animal deprived of one of the five senses). Since it lives in the ground (ἀσπαλάκων αὐτόχθονα φύλα, Oppian *Cyn.* 2.612), the packing of soil rich in clay (to facilitate drainage; see next lemma) in the vessel could be seen as an attempt to recreate a dark home for it. Moles do make a squeaky noise, and Oppian op. cit. 615 (perhaps exaggerating) says that ἀσπάλακας βασιλῆος ἀφ' αἵματος εὐχετάσθαι | Φινέος. M's σπάκα, then, is no more than an interesting scribal error; according to Schol. ad. Hdt. 1.110 τὴν γὰρ κύνα καλέουσι σπάκα Μῆδοι, Herodian *Pros. Cath.* 3.1.524.26 et alibi σπάξ· ὁ κύων παρὰ Πέρσας. Why Furlanus thought to suggest a third animal is unclear. His σκολόπακα (a variant of the ἀσκαλώπας), the wood-cock (*scolopax rusticola*) would barely be able to spread its wings in even the widest Greek pot. It should also be noticed that this is the only sign in *DS* that calls for preparation on the part of the observer.

The blind mole rat is sensitive to the earth's magnetic field, using it as a compass to guide themselves through their burrows. It is possible that the disturbance caused by an imminent electric *storm* perceived in a vessel that offered no escape would cause the animal to emit sounds of distress; winds and fair weather, which are what we have here, are harder to explain.

**49.359 ἄργιλον]** Usually spelled with two lambdas (and in Latin as *argilla*). In Greek sources, this appears as infertile earth of some sort; e.g., the soil of Arabia and Syria is said to be ἀργιλωδεστέρην τε καὶ ὑπόπετρον than that in Egypt (Hdt. 2.12.3); when it is mixed with worn-out soil the result is fertile (Th. *CP* 3.20.3); and water passes more readily down through mountain soil that is μικραὶ ... ἢ σομφαὶ καὶ λιθώδεις καὶ ἀργιλωδεῖς (Arist. *Mete.* 352b9-11). It is also, more tellingly, the earth used by potters, i.e., soil rich in (as the name indicates) white clay

(Pliny *NH* 35.151 *finger ex argilla similitudines*, Hor. *Epist.* 2.2.8 *argilla quivis imitaberis uda*).

**49.359 πιθάκνην]** A cask, which could be large enough for a homeless person to live in; Aristoph. *Eq.* 792 οἰκοῦντ' ἐν ταῖς πιθάκναισι.

**49.361 μῦες]** See above, 41.304, on squeaking and dancing mice. This sign falls into the group of animals fighting, usually for food, but seems to be unparalleled, despite its “demotic” fame. Maass, *Arati Phaenomena* (Berlin 1893) xxvi (followed by Kidd on Aratos 1123 and Mynors on Verg. *G.* 1.399 f.) conjectured σύες, thinking that *DS* was referring to the weather sign concerning pigs traceable to Demokritos, but in συσὶν ἐπὶ φορυτῷ μαργαινούσαις (Dem. B 147, quoted above, on 16.106 κόραξ) the key word is the last one, which here must have the sense “acting gluttonously” rather than merely “raging,” as LSJ says; cf. LSJ s.v. μαργόομαι 2. And in this case, φορυτῷ refers to the sizable slops thrown to pigs; cf. Alkiphron *Epist. Parasit.* 3.4.5 βρωμάτων φορυτόν. There is nothing said in Demokritos, Aratos, Vergil, or Pliny (18.364) about their carrying them off, which is not what pigs do. See next lemma for the meaning of this word here.

**49.362 φορντοῦ]** This can be anything light enough for a mouse to carry; in a man-made structure, where these mice would most likely be observed, it may mean small pieces of wood, reed, and other refuse (so schol. ad. Aristoph. *Ach.* 72); cf. Hesych. s.v. φορυτός· φρύγανα, ἄχυρα, καὶ ἀπὸ γῆς αἰρόμενος ὑπὸ ἀνέμου χόρτος, φρυγανῶδες, συρφετός, βόρβορος, ἀκαθαρσία.

## 50

**50.363 εὐδίας]** “Favorable Zeus,” i.e., when he refrains from the sending of lightning, thunder, rain, or storm clouds. Aratos 899 Διὸς εὐδιόωντος is probably a learned allusion to this generally ignored etymology.

**50.363-4 ἥλιος ... ἀνιὼν λαμπρὸς ... μὴ ἔχων σημεῖον]** Cf. Aratos 822-824

μὴ οἱ ποικίλλοιτο νέον βάλλοντος ἁρούρας



κύκλος, ὅτ' εὐδίου κεχρημένος ἥματος εἷης,  
μηδέ τι σῆμα φέροι, φαίνοιτο δὲ λιτὸς ἀπάντη.

Ptolemy *Tetrah.* 2.14.2 καθαρὸς μὲν γὰρ καὶ ἀνεπισκόπητος καὶ εὐσταθής καὶ ἀνέφελος ἀνατέλλων ἢ δύνων εὐδιεινῆς καταστάσεώς ἐστι δηλωτικός, *Geop.* 1.2.2 = Anon. Laur. 3.1 καὶ ὁ ἥλιος καθαρὸς ἀνατέλλων εὐδίαν σημαίνει.

The σημεῖον could be a sunspot (as suggested by Wood), but more likely, because more common, it is atmospheric conditions that seem to mark the sun as it passes behind them. Since there is more atmosphere between viewer and sun at sunrise and sunset, there will be more of any irregularity therein as well (and at sunrise and -set the sun is not only easier to view directly, it appears magnified). The word ποικιλία used here by Aratos (and his imitators) is uninformative, but some lines later he spells it out: Consider (he says)

εἴ τί που ἢ οἱ ἔρευθος ἐπιτρέχει, οἷά τε πολλὰ  
ἐλκομένων νεφέων ἐρυθαίνεται ἄλλοθεν ἄλλα,  
ἢ εἴ που μελανεῖ. (834-836)

See also Ptolemy (immediately after the citation above) ποικίλον δὲ τὸν κύκλον ἔχων ἢ ὑπόπυρρον . . . μέλας δὲ ἢ ὑπόχλωρος ἀνατέλλων ἢ δύνων μετὰ συννεφείας. Dust or even sea spray driven into the lower atmosphere by an approaching storm will produce a reddish sky at sunset (Kahl 139), which could explain Ptolemy's ὑπόπυρρον.

**50.363-4 μὴ καυματίας]** This sign is mentioned by Pliny *NH* 18.342 *purus oriens atque non fervens, serenum diem nuntiat*, and is probably what is meant by Ptolemy's εὐσταθής (see above), which means "calm, tranquil" in meteorological contexts (LSJ II 4).

**50.365 σελήνη πανσελήνω]** For the phrase, see above, on 12.79. For the particular idea expressed here, cf. Aratos 802-804 (observe the moon when it is full):

πάντη γὰρ καθαρῇ κε μάλ' εὐδία τεκμήριο,  
πάντα δ' ἐρευθομένη δοκέειν ἀνέμοιο κελέθους,  
ἄλλοθι δ' ἄλλο μελαινομένη δοκέειν ὑετοῖο.

Ptolemy *Tetrah.* 2.14.4 (the moon) λεπτή μὲν γὰρ καὶ καθαρά φαινομένη καὶ μηδὲν ἔχουσα περὶ αὐτὴν εὐδιεινῆς καταστάσεώς ἐστι δηλωτική, *Geop.* 1.2.1 = Anon. Laur. 6 πανσελήνος δὲ οὕσα ἐὰν καθαρά φανῇ εὐδίαν σημαίνει, *CCAG* 8.1.139.22 f. εὐχρους ἐν πανσελήνω εὐδίαν σημαίνει.

**50.365-6 δυόμενος ἥλιος ... εἰς καθαρὸν]** Cf. Aratos 825-828

εἰ δ' αὖτως καθαρὸν μιν ἔχει βουλύσιος ὥρη,  
 δύνει δ' ἀνέφελος μαλακὴν ὑποδείελος αἴγλην,  
 καὶ κεν ἐπερχομένης ἡοῦς ἔθ' ὑπεύδιος εἴη.

[Arist.] *Probl.* 26.8 (941a1) διὰ τί αἱ μὲν καθαραὶ δύσεις εὐδιενὸν σημεῖον, αἱ δὲ τεταραγμέναι χειμερινόν; Pliny *NH* 18.342 *si et occidit pridie serenus, tanto certior fides serenitatis*, Anon. Laur. 3 ~ *Geop.* 1.2.3 δυόμενος δὲ δίχα νεφῶν καθαρὸς καὶ τὴν ἐπιούσαν ἡμέραν εὐδίαν προκαταγγέλλει, *CCAG* 11.2.174.26 f. ἐὰν μέλλων δύνειν ὁ ἥλιος καθαρὸς καὶ ἀνεπιθόλωτος (“unpolluted”) ἐπὶ τὴν δύσιν χωρήσῃ, εὐδίαν τῇ ἑξῆς ἡμέρᾳ σημαίνει.

**50.365 χειμῶνος]** Storm or winter? If the former it becomes a doublet of the very next sentence. On the other hand, this same word appears in the last clause of this chapter in the latter sense, as interpreted by Aratos 850 (see below), and note the same phrase above, 46.338.

**50.367 χειμάζοντος]** Since this verb is impersonal, an absolute construction might have been expected.

**50.369 ὥχρός]** Cf. Aratos 850 f. (the sun) εὐδιός κε φέροιτο, καὶ εἴ ποτε χειμάτος ὥρη | ὥχρήσαι κατιών. Ptolemy too 2.13.100 (quoted above) mentions a ὑπόχλωρος sun, but as a sign of rain or storm.

## 51

**51.370 ὁ μείς]** See above, cc. 5 f., on the importance of the moon for predicting weather. Cf. Aratos 783 f. (the moon) λεπτή μὲν καθαρὴ τε περὶ τρίτον ἥμαρ ἐοῦσα | εὐδιός κ' εἴη, *Geop.* 1.2.1 ~ Anon. Laur. 6 τριταία καὶ τεταρταία οὔσα ἡ σελήνη καὶ λεπτή καὶ καθαρὰ φαινομένη εὐδίαν δηλοῖ, *CCAG* 8.1.139.17 τριταία λεπτή καὶ καθαρὰ εὐδιος.

**51.371 Ὦνου Φάτνη]** See above, 23.155 f., 43.314. Aratos' roundup of signs produced by the Manger (892-908) has nothing similar, but cf. Theokr. 22.21 f. ἐκ δ' Ἄρκτοι τ' ἐφάνησαν Ὦνων τ' ἀνὰ μέσσον ἀμαυρὴ | Φάτνη, σημαίνουσα τὰ πρὸς πλόον εὐδία πάντα.

**51.372 ἄλως]** Solar or lunar? Probably the latter, as this looks like the converse of the sign at 31.229-31, where broken lunar halos figure. On lunar halos, see above on 31.219 ἄλφ.

**51.373 κοιλάδες]** Hort, not unreasonably, conjectures that, just as the last clause (see previous lemma) seems to present material similar to that of 31.222, here too we should once again see a reference to the mackerel clouds found there (see n. ad loc.); this would be a simple error of iotacism. And Wood, although he translated the mss., professed ignorance as to its meaning. One could also add that κοιλάδες is usually a noun (an adjective elsewhere in Tryphiodoros 194, and even here κοιλάδος εὐνῆς could be understood as “the hollow of their bed”). Despite all this, we nonetheless retain the reading of the mss. because it almost certainly was read by Aratos, who understood it (perhaps mistakenly) as “thin, porous”:

εἴ γε μὲν ἡερόεσσα παρὲξ ὄρεος μέγαλοιο  
 πυθμένα τείνηται νεφέλη, ἄκραι δὲ κολῶναι  
 φαίνονται καθαραί, μάλα κεν τόθ' ὑπεύδιος εἶης. 990

Cf. also Verg. *G.* 1.397 *tenuia nec lanae per caelum vellera ferri*, *Geop.* 1.2.4 ἀερώδους νεφέλης ὄρει περιτεταμένης καθαρᾶς τῆς ἄκρας ὑπερφαινομένης τοῦ ὄρους εὐδίαν δηλοῖ. Kidd (who follows Hort in reading κηλάδες) translates as “a faint mist,” but this may be exaggerated; and as the next chapter shows, ὀμίχλη is available for “mist.”

**51.373 Ὀλυμπος δὲ καὶ Ἄθως]** See above, 43.320, where too these mountains are given as the chief but not exclusive locations to look to for weather signs.

**51.374 σημαντικά]** I.e., a source of signs/meaning, whatever they may be, and not = σημεῖα; see on 31 σημεῖον. This is precisely how Aristotle uses the word; cf., e.g., *Poet.* 1457a12 φωνὴ σημαντική, *An.* 420b32 σημαντικὸς ... τις ψόφος ἐστὶν ἢ φωνή. Here the word is applied to ever-present mountains, which are sources of various signs. τὰ σ. seems to indicate that, at least among scientific observers, there was a group or list of mountains that would be viewed for signs; or at any rate a recognition that some mountains were good for signs, and others not.

**51.375 πρὸς τὴν θάλασσαν αὐτά]** The reading of the mss., αὐτήν, seems excessive, if indeed it makes sense at all (“down to the sea

itself"?); Wood and Hort ignore it. παραζωννύη, moreover, is need of an object, which αὐτά (sc. ὄρη) supplies. Our reading is more in accord with Aratos 991-993

εὐδιός κ' εἴη καὶ ὅτε πλατέος παρὰ πόντου  
φαίνεται χθαμαλὴ νεφέλη, μηδ' ὑψόθι κύρη,  
ἀλλ' αὐτοῦ πλαταμῶνι παραθλίβηται ὁμοίη.

Cf. Pliny *NH* 18.356.

**51.376-7 ὕσαντος πρὸς δυσμὰς χαλκῶδες]** A copper color at sunset is often associated with rain. Mammatus clouds are particularly impressive this way (Kahl 74 f., with photograph), but these (and other coppery clouds) can occur without it having rained earlier. Aratos omits this sign.

## 52

**52.379 ὁμίχλη]** “Mist, fog” say LSJ, properly ignoring the modern distinction drawn by meteorologists between these two English words (technically, fog limits visibility to 1 km or less; mist is a cloudiness that allows for visibility greater than 1 km; Dunlop 150). The important ancient distinction was between this Greek word and one or another of the various words for cloud. See especially Arist. *Mete.* 346b32-35, where he describes what happens when ground water vaporizes. ἀναθυμίασις is the process and ἀτμίς is the first result, but further vaporization (and concentration) produces cloud, which is capable of producing rain. Mist is then said to be νεφέλης περίττωμα τῆς εἰς ὕδωρ συγκρίσεως and, as the mere residue of the cloud-making process, διὸ σημεῖον μᾶλλον ἐστὶν εὐδίας ἢ ὑδάτων· οἷον γὰρ ἐστὶν ἡ ὁμίχλη νεφέλη ἄγονος (sc. of producing rain; cf. *De Mundo* 394a19-21 ἔστι δὲ ὁμίχλη μὲν ἀτμώδης ἀναθυμίασις ἄγονος ὕδατος, ἄερος μὲν παχυτέρα, νέφους δὲ ἀραιότερα. Since mist in fact is formed directly from ground level (bodies of water, or ground moist from recent rain), there is in fact no direct link with imminent rain, although rain may indeed follow. *DS*’s ὕδωρ οὐ γίνεται ἢ ἔλαττον is therefore correct.

Morning, “falling,” mist is a sign of fair weather in cod. Mutin. 85 (*CCAG* 4.4.110), but rising it signals showers and rain: ὁμίχλη ἑωθινὴ ἐν μὲν τῇ γῇ καὶ τοῖς πεδίοις πίπτουσα εὐδιαν σημαίνει· πρὸς οὐρανὸν δὲ ἀνερχομένη νεφέλη γίνεται καὶ ὄμβρους καὶ ἀνέμους ἔχει συνεχεῖς. For more on falling mist, see below, 56.409-11; and for more detailed use of mist for weather predictions, see the entire passage of this codex copied in the introduction; above, p. 28.

**52.380 γέρανοι]** See above, 38.278-9, where deviations from their flying straight while migrating signal storm. Cf. Aratos 1010-12

καὶ δ' ἄν που γέρανοι μαλακῆς προπάροιθε γαλήνης  
ἀσφαλῶς τανύσαιεν ἕνα δρόμον ἦλιθα πᾶσαι,  
οὐδὲ παλιρρόθιοί κεν ὑπεύδιοι φορέοιντο.

Other sources mention only the quietness of the cranes as they fly into fair weather; e.g. Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) πετόμεναι δὲ ἄρα ἡσυχῇ αἱ αὐταὶ ὑπισχνοῦνται εὐημερίαν τινὰ καὶ εἰρήνην ἀέρος, Pliny *NH* 18.362 *grues silentio per sublime volantes serenitatem*.

**52.381 πρὸ ἐαντῶν]** The reading of the codd. is illogical: they do not fly until, *while flying* (πετόμενοι), they see clear weather. With our change the sentence explains (γάρ) the preceding one exactly, and has the virtue of being true as well. Cf. Arat. 1010 προπάροιθε (preceding lemma) and Arist. *HA* 9.10 τὰ πόρρω (next lemma). Our particular reading keeps as close as possible to the paradosis, but of course any synonymous expression may have been corrupted.

**52.381 καθαρὰ ἴδωσι]** Elkins (above on 38.278 ἀποστραφῶσι; see Cronin “Authorship” 327) does not actually say that the rains that hold back cranes are actually seen by them in advance, but this does not seem an unreasonable supposition for anyone to make of these high-flying birds; cf. Pliny *NH* 10.58 *volant ad prospiciendum alte*, Hes. *WD* 449 ὑψόθεν ἐκ νεφέων, Antipater Sidonios 22.2 Gow-Page (*AP* 7.172) ὑψη-πετῇ Βιστονίαν γέρανον. Arist. *HA* 9.10 (a detailed report on their activity in flight) takes this as a sign of the crane’s intelligence: ἐκτοπίζουσί τε γὰρ μακράν, καὶ εἰς ὕψος πέτονται πρὸς τὸ καθορᾶν τὰ πόρρω, καὶ ἐὰν ἴδωσι νέφη καὶ χειμέρια, καταπτᾶσαι ἡσυχάζουσιν (614b19-21). Cf. Dionysios *De Aucupio* 2.18 κἄν χειμῶνος αἰσθοῖντο, τῇ γῇ προσορμίζονται μέχρι σταθερᾶς πάλιν εὐδίας.

**52.381 γλαῦξ]** Probably the little (grey) owl, *Athene noctua*; see Thompson 76-78. Cf. Arist. fr. 270.21 Gi. (Ael. *NA* 7.7) εἰ δὲ εἴη χειμέρια, ἄσασα γλαῦξ εὐδίαν μαντεύεται καὶ ἡμέραν φαιδρᾶν, Aratos 999-1001 νυκτερὴ γλαῦξ | ἡσυχον αἰίδουσα μαραινομένου χειμῶνος | γινέσθω τοι σῆμα, Verg. *G.* 1.402 f. *solis et occasum servans de culmine summo | nequiquam seros exercet noctua cantus*, Pliny *NH* 18.362 *sic et noctua in imbre garrula*, Geop. 1.2.6 γλαῦξ ἄδουσα συνεχῶς ἐν νυκτί, *CCAG* 8.1.138.3 ἐν χειμῶνι ἄσασα γλαῦξ εὐδίαν σημαίνει, Anon. Laur. 11.19.

According to the grammarians, the nominative singular receives a circumflex; see H. W. Chandler, *Greek Accentuation*<sup>2</sup> (Oxford 1881) § 566.

**52.383 θαλαττία ... γλαῦξ]** Thompson 76 can say only “unexplained.”

**52.384 κόραξ δὲ μόνος μὲν]** As Hort points out, it would appear that ravens croaking in a group will appear in a later clause, as in fact we find in Aratos 1003-06

καὶ κόρακες μοῦνοι μὲν ἐρημαῖον βοόωντες  
 δισσάκις, αὐτὰρ ἔπειτα μετ' ἄθρόα κεκλήγοντες,  
πλειότεροι δ' ἄγελιδόν, ἐπὴν κοίτοιο μέδωνται,  
 φωνῆς ἔμπλειοι,

but since both single ravens and groups signal fair weather, Hort, in part working with a faulty text (see next lemma) is wrong to posit a lacuna (which is normally taken to be a scribal error) rather than regard it as a conscious decision of the compiler, who carelessly left in the μὲν. Aratos would have read the original; see introduction, above.

**52.385 κράξας]** The ungrammatical κράξη was introduced into the printed editions through dittography by the Aldine, and then continued as subsequent editors gave their printers marked-up copies of printed texts. A copy of this sort is called an *edition belge*; see E. J. Kenney, *The Classical text* (Berkeley 1974) 26 n. 1; as another example of error arising from this practice, Burnet's OCT of Plato contains the same *vox nihili* σποπῶμεν (for σκοπῶμεν) as that found in Hermann's Teubner at *Phdr.* 260a9.

## 53

**53.387 κορώνη]** See above, 16.104-6 and 39.283 f. In the latter passage it is said that crows cawing late in the day signal storm, which fits in well with this passage; but it is also said there that if a crow caws twice quickly and then a third time this too signals storm. Assuming coherence and consistency between related signifiers, we must imagine that there was a clear difference between the two sound patterns.

**53.387 ἔωθεν]** It is tempting to print the highly poetic variant ἡῶθεν (only Homer and Hellenistic epicizers) as the *lectio difficilior*.

**53.388 ὄρχιλος ἐξ ὀπῆς]** The reverse of what is said in 39.281 f., but since birds are always leaving their nest for food, this cannot be interpreted too strictly. Perhaps we should understand “during a storm,” i.e., the bird flying out at this time signals the end of the storm.

**53.389 ἐξ ἐρκίων]** Hort translates “from a hedge,” which hardly seems like a significant action of the part of a bird; Wood’s “out of enclosures” seems closer to the mark. Both, however, agree in offering three different starting points, whereas we prefer to take the latter two as exegetical of the first: ὀπή is any “cavity” the wren may be living in, but since they do not live in the ground (which this word can mean: τὰς ὀπὰς ἐν τῇ γῇ, Arist. *HA* 559a4, cf. 623a30), its more limited but still generic meaning of “nests” (which can of course be in trees) is narrowed down to the more observable nests in human dwellings, either those in the enclosure walls or those in the house itself. Cf. Apoll. Rh. 2.1073 f. ὥς δ’ ὅτε τις κεράμῳ κατερέψεται ἐρκίον ἀνὴρ | δῶματος, where, however, ἐρκίον δωματίων taken together = “house.” Bart. omits this phrase.

For the wide variety of lairs wrens make for themselves, see D. A. Sibley, *The Sibley Guide to the Birds* (New York 2000) 384 (and note that they belong to the Linnaean family of *Troglodytidae*).

**53.389 ἔξωθεν]** Altogether unnecessary, but harmless.

**53.390 βορεύοντος]** A lovely hapax legomenon, one that Coray would annihilate with his conjecture βορείου ὄντος.

**53.390 βορρᾶθεν]** Not, as was the case with ἔξωθεν, unnecessary, but specifying the direction from which the gleam is seen. For this adverb with a noun, cf. Hipp. *Vict.* 2.37, where it appears once with ὄρη and again with κοῖλα.

**53.390 ὑπόλαμψις]** Elsewhere only in Hipp. *Epid.* 4.31, where two patients are said to have the area surrounding their hypochondria hard with a sheen beneath the skin (σκληρόν δὲ καὶ κάτωθεν ἔχον ὑπόλαμψιν). The related verb ὑπολάμπω also has the sense of a diffuse gleam: ἔαρ ὑπέλαμπε (Hdt. 1.190.1), ὑπέλαμπεν ἡμέρα (Plut. *Ant.* 49).

As the example from Hdt. 1.190 shows, the gleam need not be reddish in color, nor is it here (unless λευκή is predicate).

**53.391 ἐὰν πεφραγμένη]** This verb, preserved or moderately mangled, in the mss., should be retained, as it offers a lively and precise metaphor which Schneider's bland τεταγμένη lacks. (Nor is his conjecture ἐναντία attractive.) The clearly defined cumulus cloud is imagined to have been fenced in.

**53.391 νεφέλη ὀγκώδης]** A cumulus cloud, whose modern Latin name was chosen to express this very bulkiness: "It may be allowable to introduce a Methodical nomenclature, applicable ... to the Modifications of Cloud ... Cumulus, convex or conical heaps, increasing upward from a horizontal base" (L. Howard, *On the Modifications of Clouds* [London 1803] 1 f.). Cumulus clouds, furthermore, as here, are often associated with fair weather; Dunlop 22. Bart. translates as *tumorosa*, which nicely conveys their lumpiness.

## 54

**54.394 πρόβατα ὀψὲ ὀχενόμενα]** See 40.295 f. for the converse, and Aratos 1071-74 cited in the commentary ad loc.

**54.394 ἀποτελοῦσι τὸ σημείον]** A unique variation of the usual formulae.

**54.395 βοῦς ἐπὶ τὸ ἀριστερόν]** See 41.300-02 for the converse.

**54.396 κύων ὥσαύτως]** But for this sign there is no converse; the dog rolling on the ground as a sign of wind in 29.198 presumably rolls in the familiar way, from side to side.

**54.396 τέττιγες πολλοί]** Cicadas have not been mentioned earlier because they are associated only with summer and warmth. Of the earlier references, note [Hes.] *Scutum* 393-395 τέττιξ | ὄζω ἐφεζόμενος θέρος ἀνθρώποισιν ἀείδειν | ἄρχεται, Plato *Phdr.* 230c θερινόν τε καὶ λιγυρόν ὑπηγεῖ τῷ τῶν τεττίγων χορῷ, Th. fr. 355a (Ael. *NA* 3.38) ψυχροὶ δὲ ἄρα ὄντες τὴν σύγκρασιν οἱ τέττιγες εἶτα μέντοι πυρούμενοι τῷ ἡλίῳ ἄδουσι; see further Davies and Kathirithamby, *Greek Insects* (London



1986) 113 f. Most of these and later sources associate the mere presence of the cicada, marked if by anything then by its sound, rather than great numbers with summer heat; and note Arist. *HA* 556b5 f., who takes the presence of many cicadas as a concomitant (not a sign) of rain (γίνονται δὲ πολλοὶ ὅταν ἐπομβρία γένηται; *HA* 5.30 is devoted to the cicada). There seems, then, to be no parallel passage to the sign in *DS*.

**54.397 νοσῶδες]** This has been correctly understood by Beavis 99: “Their presence in unusual numbers was seen as a sign of an especially *hot and therefore* unhealthy season,” our emphasis indicating where Beavis has fleshed out the thought. That he is on the right track is supported by the ancient observations that (i) cicadas hatched at the time of the summer solstice (Arist. *HA* 556b8) and (ii) solstices were times potentially dangerous to health (Hipp. *Aer.* 11). Perhaps Aristotle’s statement (see above) about the association between many cicadas and rains forms a link in the causation here. On the medical use of weather prognostication, see above, Introduction, n. 2.

**54.397 τὸ ἔτος]** Although the evidence amassed by LSJ and other lexica is unanimous in understanding ἔτος as “year,” weather signs, as we have seen, do not have such long-range powers; it is tempting, therefore, to follow Hort and Beavis (see above) and take it here = “season.” Aristotle lends support: In discussing variation in rainfall he says that because of the increase and decrease, and expansion and contraction, of atmospheric exhalation, clouds and wind always form in their natural season (κατὰ τὴν ὥραν ἐκάστην); διὰ δὲ τὸ ἐνίοτε μὲν τὴν ἀτμιδῶδη (sc. ἀναθυμίασιν) γίνεσθαι πολλαπλασίαν ὅτε δὲ τὴν ξηρὰν καὶ καπνῶδη, ὅτε μὲν ἐπομβρα τὰ ἔτη γίνεται καὶ ὑγρὰ, ὅτε δὲ ἀνεμῶδη (*Mete.* 360b2-5). Here too, although “years” cannot be altogether ruled out (Lee so translates in the Loeb), “seasons” produces better sense. And ἀφυαί, small fry, which are born and caught seasonally (*HA* 569b10), are best and appear in greatest amount ὁπόταν ἔνυγρον καὶ εὐδιεινὸν γένηται τὸ ἔτος (b21 f.). Cf. *Probl.* 862a4-6 διὰ τί, ὅταν ἐκ γῆς ἀτμός ἀνίη πολὺς ὑπὸ τοῦ ἡλίου, τὸ ἔτος λοιμῶδες γίνεται; ἢ ὅτι ὑγρὸν ἀνάγκη καὶ ἐπομβρον τὸ ἔτος σημαίνειν, καὶ τὴν γῆν ὑγρὰν ἀνάγκη εἶναι; and a few lines below, διὰ τί γίνεται τὰ ἔτη νοσῶδη, ὅταν γένηται φορὰ τῶν μικρῶν βατράχων; (In the answer to this question ἐνιαυτός is used as a synonym for ἔτος, but this former word too often means part of a year; see below, on 56.406.)

**54.397 ἔτος σημαίνουσι]** At this point, at the very bottom of its page, V ends, with the comment καὶ ταῦτα μὲν περὶ τῶν καθόλου παρατηρήσεων ἡμεῖς γεγράφαμεν ὧδε: +.

**54.397-8 λύχνος ... καιόμενος ἡσυχᾶτος]** For the converse, see 14.94 f.

**54.398 ἐπ' ἄκρου]** The change to the dative is uncalled for. ἄκρος can refer to either the tip or the point of something that does in fact have a tip or point (e.g., γλῶσσα, δάκτυλος, κορυφή), or to the outer extremity of something in two (πεδῖον) or three dimensions (a body of water [τὸ ἄκρον is its surface], a stone, a human body [τὸ ἄκρον is its skin]). If the former here, then the spout of the lamp; if the latter, its whole surface. The related passage at 42.312 f., especially the phrase κέγχροις πολλοῖς κατάπλεως, suggests the latter.

**54.399 λαμπρούς]** Since κέγχρος can be masc. (e.g., Th. *HP* 1.12.2) or fem. (e.g., Arist. *Ph.* 250a20), there was no reason to alter the text here, esp. since it is masc. elsewhere in *DS* (25.170, 42.312).

**54.399-400 περιγράψῃ λαμπρὰ γραμμῇ]** The datives of the mss. were altered to nominatives by Schneider to provide a subject for the verb. (Furlanus' alteration of the verb from aorist to present is pointless.) περιγράφω regularly takes an accusative which is either the object to be surrounded (e.g., the shadow of the sun on the floor; Hdt. 8.137) or the mathematical shape surrounding this object (e.g., κύκλον; many exx. in Euclid); here the former, with ἐν κύκλῳ a substitute for the latter. Bart.'s *circumscribat splendida linea* allows for either nominative or ablative.

## 55

Aratos 1051-59 echoes this chapter:

τριπλόα δὲ σχῖνος κυέει, τρισσαὶ δὲ οἱ αὔξαι  
 γίνονται καρποῖο, φέρει δὲ τε σήμαθ' ἐκάστη  
 ἐξείης ἄρότῳ. καὶ γάρ τ' ἄροτήσιον ὥρην  
 τριπλόα μείρονται, μέσσην καὶ ἐπ' ἀμφοτέρ' ἄκρας·  
 πρῶτος μὲν πρῶτην ἄροσιν, μέσσος δὲ τε μέσσην  
 καρπὸς ἀπαγγέλλει, πυμάτην γε μὲν ἔσχατος ἄλλων.

1055

ὄντινα γὰρ κάλλιστα λοχαίη σχῖνος ἄρηται,  
 κείνῳ κ' ἐξ ἄλλων ἄροσις πολυλήϊος εἴη,  
 τῷ δέ γ' ἀφαιροτάτῳ ὀλίγη, μέσσω δέ τε μέσση.

A scholion on this passage, quoting from Plutarch's no longer extant work on Aratos, provides us with Th. fr. 415, which also links the farmer's plowing with the fruit of the *schinos* (and πρῖνος; see above, 45.332; for the meaning of the former, see next lemma): φησὶν οὖν ὁ Θ. ὅτι ὁ πρῖνος καὶ ὁ σχῖνος αὐχμηρὰ τῇ κράσει καὶ ξηρότερα τῶν ἄλλων πεφυκότα πολὺν καρπὸν οὐ φέρει, ἐὰν μὴ εἰς βάθος ὑγρανθῇ. εἰκότως οὖν τῇ τούτων εὐφορίᾳ καταμαντεύονται περὶ τῶν σπερμάτων οἱ γεωργοί, μιᾶς αἰτίας οὕσης δι' ἣν ἀμφοτέροις ἢ πολυκαρπία· εἰ δ' ὑπερβάλλει τοῦ καρποῦ τὸ πλῆθος, οὐκ ἀγαθὸν σημεῖον· ἄμετρον γὰρ ἐπομβρίαν καὶ πλεονασμὸν ὑγρότητος ἢ περὶ τὸν ἀέρα ἄνεσις καὶ θηλύτης δηλοῖ. ("Th. says that the kermes-oak and the *schinos* are by nature parched in constitution and drier than other [trees], and do not bear much fruit unless they are deeply watered. It is reasonable, then, that the farmers draw inferences about their crops when these [trees] bear much fruit; for there is a single reason on account of which there is much fruit in both cases. But if the amount of fruit is excessive, it is not a good sign; for the slackness and delicacy of the air indicate immoderate rainfall and an excess of moisture.") Maass says that this Theophrastos passage is the source for *DS*, but Martin ad loc. disagrees, arguing that it does not agree with what Theophrastos says in *CP* or *HP*. For a doxographical analysis of this passage, see Sharples' commentary. As Cronin "Authorship" 326 notes, these two trees are the only botanical signs in *DS*.

**55.401 σχῖνον]** This word has two quite distinct references. (i) It may refer to the mastic (usually spelled mastich in the UK) or lentisc tree (*Pistacia lentiscus*), known for its resinous gum (μαστίχη; cf. Th. *HP* 9.1.2) and much favored by goats (Eupolis fr. 13.4 K-A, Theokr. 5.129, Babrius 3.2). This "is a common, usually small spreading, evergreen shrub or sometimes a tree to 8 m"; O. Polunin, *Trees and Bushes of Britain and Europe* (London 1976) 120; see id. & A. Huxley, *Flowers of the Mediterranean* (London 1967) 119. (ii) Or it may refer to the squill (σχιλλὰ), a small liliaceous plant grown for several culinary and pharmacological purposes; see Polunin, *Flowers of Greece and the Balkans* (London 1980) 493 f., with plate 58 (1631, 1631a). The description of the latter in Th. *HP* 7.13.6 is close to that of the σχῖνος in *DS*: τῆς δὲ

σπίλλης καθ' αὐτόν, εἰς ὕστερον ἐπὶ τούτῳ τὸ ἄνθος ἀνίσχον προσκαθήμενον· ποιεῖται δὲ τὰς ἀνθήσεις τρεῖς, ὧν ἡ μὲν πρώτη δοκεῖ σημαίνειν τὸν πρῶτον ἄροτον, ἡ δὲ δευτέρα τὸν μέσον, ἡ δὲ τρίτη τὸν ἔσχατον· ὥς γὰρ ἂν αὖται γένωνται καὶ οἱ ἄροτοι σχεδὸν οὕτως ἐκβαίνουσιν. We therefore follow Sharples (whose comments ad fr. 415 and 417.14 survey more of the relevant ancient testimony than is done here) in taking as some sort of squill the σχῖνος of our passage as well as that in Aratos (*pace* Kidd, who takes it without argument as the mastic).

**55.402 μέρη]** Not “parts,” but “turns, times”; LSJ s.v. II, citing, i.a., Plato *Rep.* 540b ὅταν δὲ τὸ μέρος ἤκη.

**55.403-04 ὥς ἂν τούτων κλίνη κάλλιστα]** Rather poorly expressed but probably to be left untouched. What is still wanted is a thought that goes “as each fruiting of the squill turns out (*simpliciter*, not “best”), so will turn out the corresponding plowing.” Yet ὥς seems guaranteed by οὕτως, there are many parallels for a partitive τούτων referring back to a preceding clause, and the superlative κάλλιστα is protected by ἀδρότατος and Aratos 1057 (above). More difficult is the verb, as Hort, who altered to ἐκβαίνειν (from the parallel passage in Th. *HP* 7.13.6, cited above), saw; for this intransitive use of the active in the sense “incline, tend (towards)” (LSJ s.v. IV), cf. [Arist.] *Physiog.* 812b2 f. οἱ δὲ μὴ ἄγαν μέλανες ἀλλὰ κλίνοντες πρὸς τὸ ξανθὸν χροῶμα εὐψυχοί. Aratos 1057-59 presents a fuller statement, either because he felt the same misgivings we do or because this fuller version was in his source. The compiler of *DS* probably excerpted clumsily here.

## 56

After the fourth major section, on fair weather, someone has added other signs, some of which would fit quite nicely in those on wind or rain. That some affect longer periods than those given earlier is not really a reason for distinguishing them, nor is the fact that the first predicts hail rather than wind, rain, storm, or fair weather a reason to segregate, since these were predicted above, 25.169 f. and 36.257 f. Similarly, in c. 57, some signs predict cold, but this too had been predicted earlier (44.324 f., 46.340, 48.354 f.).

**56.406 τοιάδε σημεῖα]** If the cold predicted at 57.418 f. is that of the onset of a cold spell, τοιάδε looks forward to the end of the work (except perhaps for the last sentence, on which see below).

**56.406 ἐνιαυτῶν]** Probably not whole years, which (Joseph in the Bible and the Farmer's Almanac excepted) are not usually able to be known so far in advance; more likely "seasons"; that is, ἐνιαυτός in the singular does regularly mean "year," but the plural often refers to seasons throughout one or more years; cf. *Od.* 1.16 ἔτος ἦλθε περιπλομένων ἐνιαυτῶν, Aristoph. *Ra.* 347 f. χρονίους ἐτῶν παλαιῶν ἐνιαυτούς.

**56.409 χάλαζαν]** See above, on 25.169 f. χάλαζα.

**56.410 δμίχλαι πίπτωσι]** See above, on 52.379. Since mist was believed to be formed as clouds were, it must descend to reach ground level.

**56.411 ἀμφοτέρων ἀριθμουμένων]** "With both first and last counted"; i.e., the seventh month is six months from now, the normal Greek way of expressing ordinals.

## 57

**57.416 σημαίνει ... τὰ πνεύματα]** As noted in the introduction (above, p. 34), occasionally *DS* employ winds as signs in themselves.

**57.417 ἡοῦς]** See Maass *GGA* (1893) 628.

**57.417 μεσημβρίας]** Here for the first time to indicate direction rather than time of day, as seems regular in Ionic; cf. Hekataios 1 F 108 *FGrHist*, Hdt. 1.6 etc. Elsewhere *DS* uses a form of βορρ- for "south."

**57.418 πνεύματα]** Winds change from signified to signifier, somewhat reflexively in part, since when they come from the north they signal "winds and cold," but this probably means that winds (which are not very cold) signal (with hendiadys) cold(er) winds to follow; cf. *Carmina Adespota* 1000 *PMG* πρὸ χειμάτος ὥστ' ἀνὰ ποντίαν ἄκραν βορρᾶ ζάεντος, Verg. *G.* 1.352 *agentis frigora ventos*.

**57.419 κομήτας]** At 34.245-7 comets signaled winds, and if many appeared drought as well. Here they seem to signal wind (which repeats 34.245) and rain (which cannot accompany drought). Cold, furthermore, which is already included among the “aforementioned” is added at the end.

**57.419 Αἰγύπτιοι]** It is a mystery why such an obviously Greek word as κομήτης (see Gilbert 655 n. 4) is credited to the Egyptians. Aristotle does, however, mention their views twice in his discussion of comets (*Mete.* 343b12, 28), so perhaps he credited them with the notion of calling such heavenly bodies “hairy.” Or perhaps a disruption of the text was later patched up grammatically but with some loss of the original sense. Note also that Aelian’s second chapter devoted to weather signs (*NA* 7.8) turns from Aristotle as a source (7.7) to “The Egyptians” (Αἰγυπτίων ἀκούω λεγόντων), who “assert that the antelope is the first creature to know when the Dog-Star rises, and testifies to the fact by sneezing. Note too that “Egyptian farmers have learned that crocodiles know in advance how far the Nile will flood and do not lay their eggs beyond this limit” (Plut. *Sollert. An.* 982c). M. Wellmann, “Ägyptisches,” *Hermes* 31 (1896) 221-253, argues that Apion’s *Aigyptiaka* (i c. AD) was the source for both Aelian and Plutarch’s “Egyptian” material. It is quite likely that this last section of *DS* is an appendix of Apionic origin.

**57.421 τοῖς δὲ ἄστροις]** Schneider altered the sentence so as to leave σημαίνειν without a subject. The reading of most mss., however, can be retained if we allow for the construction of impersonal εἶωθε + dative, which, it seems, can be paralleled only by Aristoph. *Eccl.* 282-4 εἶωθ' ἐκεῖ | τοῖς μὴ παροῦσιν ... | ὑπαποτρέχειν; see Ussher ad loc. for a defense. (Since our example has been emended away in modern editions, the Aristophanic passage was in danger of falling prey to the rule that *einmal ist keinmal*; now, however, *zweimal* should keep both preserved.)

**57.422-3 ἡμερίαις καὶ τροπαῖς ... πρὸ αὐτῶν ἢ ὕστερον]** This notion goes back to Demokritos: Pliny *NH* 18.231 (DK 68 B 14.4) *Democritus talem futuram hiemem arbitratur qualis fuerit brumae dies et circa eum terni, item solstitio aestatem*, *Geop.* 1.5.3; see Maass *GGA* (1893) 632 f. On Demokritos’ interest in weather prediction, see Sider, “Demokritos on the Weather,” in A. Laks and C. Louguet (eds.), *Qu’est-ce que la philosophie présocratique* (Villeneuve d’Ascq 2002) 287-302.



ANEMΩN ΘΕΣΕΙΣ ΚΑΙ ΠΡΟΣΗΓΟΡΙΑΙ  
ΕΚ ΤΩΝ ΑΡΙΣΤΟΤΕΛΟΥΣ ΠΕΡΙ ΣΗΜΕΙΩΝ

[ARISTOTLE] ON THE LOCATIONS  
AND NAMES OF THE WINDS

Edited and Translated by Victor D'Avella

Manuscript sigla are as listed for *DS*.

Modern printed editions are as follows:

Bekker: Immanuel Bekker. *Aristoteles Graece*. Vol. 2 (Berlin 1831) 973.

Rose (three editions of *De Ventorum Situ*, all the same):

Valentin Rose. *Aristoteles Pseudepigraphus* (Leipzig 1863) 247-250. [fr. 232]

—, *Aristotelis qui ferebantur librorum fragmenta* (Leipzig 1886) 199-201. [fr. 251]

—, *Aristotelis opera*, ed. Academia Regia Borussica. vol. 5 (Berlin 1870) 1521 f.



ΑΝΕΜΩΝ ΘΕΣΕΙΣ ΚΑΙ ΠΡΟΣΗΓΟΡΙΑΙ  
ΕΚ ΤΩΝ ΑΡΙΣΤΟΤΕΛΟΥΣ ΠΕΡΙ ΣΗΜΕΙΩΝ

- 973a1 Βορράς. οὔτος ἐν μὲν Μαλλῷ Παγρεύς· πνεῖ γὰρ ἀπὸ κρημνῶν  
μεγάλων καὶ ὀρῶν διπλῶν παρ' ἄλληλα κειμένων, ἃ καλεῖται  
Παγρικά. ἐν δὲ Καύνῳ Μέσης. ἐν δὲ Ῥόδῳ Καυνίας· πνεῖ γὰρ 5  
ἀπὸ Καύνου, ἐνοχλῶν τὸν λιμένα αὐτῶν τῶν Καυνίων. ἐν δὲ  
Ῥολβία τῇ κατὰ Μάγυδον τῆς Παμφυλίας Ἰδυρεύς· πνεῖ γὰρ ἀπὸ  
νήσου ἣ καλεῖται Ἰδυρίς. τινὲς δὲ αὐτὸν Βορράν οἶονται εἶναι ἐν  
οἷς καὶ Λυρνατιεῖς οἱ κατὰ Φασηλίδα.
- Καικίας. οὔτος ἐν μὲν Λέσβῳ καλεῖται Θηβάνας· πνεῖ γὰρ 10  
ἀπὸ Θήβης πεδίου τοῦ ὑπὲρ τὸν Ἐλαιτικὸν κόλπον τῆς Μυσίας·  
ἐνοχλεῖ δὲ τὸν Μιτυληναίων λιμένα, μάλιστα δὲ τὸν Μαλόεντα·  
παρὰ δὲ τισι Καυνίας, ὃν ἄλλοι βορράν οἶονται εἶναι.
- Ἀπηλιώτης. οὔτος ἐν μὲν Τριπόλει τῆς Φοινικῆς Ποταμεὺς 15  
καλεῖται, πνεῖ δὲ ἐκ πεδίου ὁμοίου ἄλῳνι μεγάλῃ, περιεχομένου  
ὑπὸ τε τοῦ Λιβάνου καὶ τοῦ Βαπύρου ὄρους· παρὸ καὶ Ποταμεὺς  
καλεῖται. ἐνοχλεῖ δὲ τὸ Ποσειδώνειον. ἐν δὲ τῷ Ἰσικῷ κόλῳ  
καὶ περὶ Ῥωσσὸν Συριάνδος. πνεῖ δὲ ἀπὸ τῶν Συρίων πυλῶν, ἃς 20  
διέστηκεν ὃ τε Ταῦρος καὶ τὰ Ῥώσια ὄρη. ἐν δὲ τῷ Τριπολιτικῷ  
κόλῳ [ὁ] Μαρσεύς, ἀπὸ Μάρσου κόμης. ἐν δὲ Προκοννήσῳ 20  
καὶ ἐν Τέῳ καὶ ἐν Κρήτῃ καὶ Εὐβοίᾳ καὶ Κυρήνῃ Ἑλλησποντίας.  
μάλιστα δὲ ἐνοχλεῖ τὸν τε τῆς Εὐβοίας Καφηρέα καὶ τὸν Κυρη-  
ναῖον λιμένα, καλούμενον δὲ Ἀπολλωνίαν· πνεῖ δὲ ἀφ' Ἑλλη-  
σπόντου. ἐν δὲ Σινώπῃ Βερεκυντίας ἀπὸ τῶν κατὰ Φρυγίαν 25

1sq. ἈΡΙΣΤΟΤΕΛΟΥΣ ΠΕΡΙ ΘΕΣΕΩΝ ΚΑΙ ΠΡΟΣΗΓΟΡΙΩΝ ΤΩΝ  
ἈΝΕΜΩΝ Q : ἐκ τῶν ἀριστοτέλους σημείων L 3 Βορράς PL : Βοράς M  
κρημνῶν Bekk. : κρηνῶν M 6 τῶν Καυνίων Rose : τὸν ἀκανίαν M 7  
Μάγυδον Rose : μύγαλον M Ἰδυρεύς Meineke : γαυρεύς M 8 Ἰδυρίς  
Meineke : γαυρίς M 9 Λυρνατιεῖς Rose : λυρναντεῖς M 11 ἔλαιτικόν  
MQ : ἔλαιατικόν cett. 13 τισι Καυνίας Rose : τοῖς καννίας MB : τῆς  
καννίας SQ<sup>a.c.</sup> : τοῖς καννιοῖς P<sup>a.c.</sup> : ἐν καννίου L : αἰκαννίας Bekk.  
βορράν PAld.L : Βορέαν M 17 Ποσειδώνειον Bekk. : Ποσειδόνιον M :  
ποσειδόνοιον B 18 Συριάνδος tent. Μυριανδεύς Rose 19 τὰ Ῥώσια Rose :  
ταῦροσία M 20 [ὁ] secl. Bekk. 21 Ἑλλησποντίας Ald.L : ἐλισποντίας M :  
ἐλισποντίας SQ 22 Καφηρέα Ald.L : καφηρεα M : καὶ φηρέα SQ :  
καιφηραία B 23 Κυρηναῖον PAld.L : Κυρηναίων M 24 Βερεκυντίας Bekk.  
: βερεκυπτίας M

## On the Locations and Names of the Winds

Borras: This wind is called Pagreus in Mallos, for it blows from lofty crags and twin mountains facing each other named Pagrika. At Kaunos, however, it is called Meses and in Rhodes Kaunias, for it blows from Kaunos, vexing the Kaunians' harbor. In Olbia along Magydos in Papmphygia it is called Idyreus, for it blows from the island called Idyros. There are others, however, who think that it is Borras, among whom number the Lyrnatians who dwell in Phaselis.

Kaikias: In Lesbos this wind is called Thebanas, because it blows from the plain of Thebes beyond the Elaitic bay in Mysia and vexes the harbor of the Mityleneans and the temple of Malian Apollo most of all. Among some it is known as Kaunias, which others think of as Borras.

Apeliotes: This wind is called Potameus in Tripolis in Phoenicia, and it blows from a plain that is similar to a large threshing floor and is surrounded by the mountains Libanos and Bapyros. For this reason too it is also called Potameus. It harries Poseidonion. But at the bay of Issos and around Rossos it is called Syriandos, for it blows from the Syrian gates which the Tauros and Rosian mountains divide. At the bay of Tripolis, however, it is called Marseus, from the village of Marsos. At Prokonnesos, Teos, Crete, Euboia, and Kyrene, it is called Hellespontias. Blowing from the Hellespont it batters most of all Kapheres in Euboia and the harbor of Kyrene, which is called Apollonia. In Sinope it is

973b1 τόπων πνέων. ἐν δὲ Σικελίᾳ Καταπορθμίας, πνέων| ἀπὸ τοῦ 25  
πορθμοῦ. τινὲς δὲ αὐτὸν Καικίαν οἶονται εἶναι, Θηβάναν προσ-  
αγορεύοντες.

Εὖρος. οὗτος ἐν μὲν Αἰγαῖς ταῖς κατὰ Συρίαν Σκοπελεὺς κα-  
λεῖται ἀπὸ τοῦ Ῥωσίου σκοπέλου, ἐν δὲ Κυρήνῃ Κάρβας ἀπὸ  
5 τῶν Καρβανῶν τῶν| κατὰ Φοινίκην· διὸ καὶ τὸν αὐτὸν Φοινικίαν 30  
καλοῦσιν τινες. εἰσὶ δὲ οἱ καὶ Ἀπηλιώτην νομίζουσιν εἶναι.

Ὁρθόνωτος. τοῦτον οἱ μὲν Εὖρον, οἱ δὲ Ἀμνέα προσαγορεύ-  
ουσιν. Νότος δὲ ὁμοίως παρὰ πᾶσι καλεῖται· τὸ δὲ ὄνομα διὰ τὸ  
10 νοσώδη εἶναι· ἔξω δὲ κάτομβρον, κατ' ἀμφοτέρα δὲ νότον·| Λευ-  
κόνωτος ὁμοίως· τὸ δὲ ὄνομα ἀπὸ τοῦ συμβαίνοντος· λευκαίνεται 35  
γάρ. Λίψ. καὶ οὗτος τὸ ὄνομα ἀπὸ Λιβύης, ὅθεν πνεῖ. Ζέφυρος.  
καὶ οὗτος τόδε τὸ ὄνομα διὰ τὸ ἀφ' ἐσπέρας πνεῖν. ἡ δὲ ἐσπέρα  
... Ἰάπυξ. οὗτος ἐν Τάραντι Σκυλλητίνος ἀπὸ χωρίου Σκυλλαν-  
15 τίου. κατὰ δὲ| Δορύλαιον τὸ Φρυγίας ὑπὸ δὲ τινων Φαραγγίτης·  
πνεῖ γὰρ ἔκ τινος φάραγος τῶν κατὰ τὸ Παγγαῖον. παρὰ 40  
πολλοῖς δὲ Ἀργέστης.

Θρακίας. κατὰ μὲν Θράκην Στρυμονίας. πνεῖ γὰρ ἀπὸ τοῦ  
Στρυμόνος ποταμοῦ, κατὰ δὲ τὴν Μεγαρικὴν Σκίρρων ἀπὸ τῶν  
20 Σκιρρωνίδων πετρῶν, ἐν δὲ Ἰταλίᾳ καὶ Σικελίᾳ Κιρκίας διὰ τὸ  
πνεῖν ἀπὸ τοῦ Κιρκαίου. ἐν δὲ Εὐβοίᾳ καὶ Λέσβῳ Ὀλυμπίας, τὸ 45  
δὲ ὄνομα ἀπὸ τοῦ Πιερικοῦ Ὀλύμπου· ὀχλεῖ δὲ Πυρραίους.

Ὑπογέγραφα δέ σοι καὶ τὰς θέσεις αὐτῶν, ὥς κεῖνται καὶ  
πνέουσιν, ὑπογράψας τὸν τῆς γῆς κύκλον ἵνα καὶ πρὸ ὀφθαλμῶν  
25 σοι| τεθῶσιν.

τέλος τῶν ἐν τοῖς ἀνέμοις προσαγορίων. 50

29 Ῥωσίου *Rose* : ῥωσίων *M* 30 Φοινίκην *Bekk.* : φοινίκων *M* 32  
Ὁρθόνωτος *M* : Ὁρθόνωτον *Ald.* : ὀρθόνωτος *Rose* 36 *post* γὰρ *lacunam*  
*posuit Causabon* 37 *post* ἐσπέρα *lacunam indicavit Causabon* 38 Σκυλλητίνος  
*Rose* : Σκυλητίνος *M* 39 Σκυλλαντίου *Rose* : σκυλαντίμου *M* δὲ  
Δορύλαιον τὸ *Rose* : δεοραλεοντο *M Ald.* *post* Φρυγίας *lacunam indicavit*  
*Rose* 40 Παγγαῖον *M* : πηγαῖον *Pald.L* 44 Κιρκίας *Rose* : κίρκας *M* 45  
Ὀλυμπίας *Pald.L* : ὀλαμπίας *M*

called Berekyntias, blowing from the regions throughout Phrygia, and in Sicily Kataporthmias, blowing from the strait. Some, however, think that it is Kaikias, calling it Thebanas.

Euros: At Aigai in Syria this wind is called Skopeleus from the Rhosian mountain crag [Greek σκόπελος], but in Kyrene it is called Karbas after the Karbanes in Phoenicia; for this reason some also call the same wind the Phoenician wind, but there are also others who think that it is Apeliotes.

Orthonotos: Some call this wind Euros, others Amnes. Notos is given the same name by all. Its name is owed to the fact that that the wind brings sickness [Greek νόσος] and furthermore because it is rainy [i.e., νότιος]. There are therefore two reasons for its name. Likewise, Leukonotos is called the same by all. The name comes from an accidental property, since it whitens [Greek λευκός]. Lips: This name derives from the word “Libya,” whence it blows. Zephyros: This wind also has its name on account of its being from the west; and the west.... Iapyx: This wind in Taras is called Skylletinos, from the place Skyllantion. At Dorylaion it is called Phrygias and by some Phrangites, for it blows from an ravine [Greek φάραγξ] at Pegaion, but among many it is known as Argestes. Thrakias is called Strymonias at Thrace [Thrakia], for it blows from the river Strymon, and at Magarike Skirron, from the Skirronides rocks. In Italy and Sicily it is known as Kirkas, on account of the fact that it blows from Kirkaïos, and in Euboia and Lesbos as Olympias, whose name derives from Pierian Olympos, and it vexes the Pyrraioi.

I have written down for you their [sc. the winds'] locations, how they are situated and whence they blow. In addition, I have drawn the circumference of the earth, in order that they may be displayed before your eyes.



## BIBLIOGRAPHY

*Full references to modern authors cited by name alone can be easily be figured out in the bibliography proper. Some frequent abbreviations are:*

Bart. = Bartholomaeus of Messina. See Kley, below.

CCAG = *Corpus Codicum Astrologorum Graecorum*.

DS = *De Signis*.

FHSG = W. W. Fortenbaugh, Pamela Huby, R. W. Sharples, and D. Gutas, *Theophrastus of Eresus: Sources for this Life, Writings, Thought and Influence*. 2 vols. Leiden 1992. All fragments of Theophrastus are cited by the numbers in these volumes.

K-A: Rudolf Kassel and Colin Austin, *Comicorum Graecorum Fragmenta*. Berlin.

K-G = R. Kühner and B. Gerth, *Ausführliche Grammatik der griechischen Sprache*, vol. 2, in 2 parts. Hannover and Leipzig 1898; repr. Darmstadt 1966.

PMG = D. L. Page, *Poetae Melici Graeci*. Oxford 1962.

RE = Pauly-Wissowa, *Real-Encyclopädie der classischen Altertumswissenschaft*.

RUSCH = Rutgers University Studies in Classical Humanities.

SH = *Supplementum Hellenisticum*, ed. Hugh Lloyd-Jones and P. Parsons. Berlin 1983.

SVF = *Stoicorum Veterum Fragmenta*, ed. H. von Arnim.

TrGF = *Tragicorum Graecorum Fragmenta*, ed. Bruno Snell et al. Göttingen.

Th. = Theophrastus (note that this abbreviation is never used to refer to the author of *DS*).

Thompson = either (i) D'Arcy W. Thompson, *A Glossary of Greek Birds*. London 1936; or (ii) id. *A Glossary of Greek Fishes*. London 1947.

W = M. L. West, *Elegi et Iambi Graeci*. 2nd ed. Oxford 1991-92.

### I. Some Ancient Texts and the Editions from which they are cited

- Anaxagoras: D. Sider, *Anaxagoras*, 2nd ed. Sankt Augustin 2005.
- Antigonos: Alessandro Giannini, *Paradoxographorum Graecorum Reliquiae* (Milan 1966) 31-111.
- Apollonios: *Historiae Mirabiles*, ed. A. Giannini, *Paradoxographorum Graecorum Reliquiae* (Milan 1966) 119-143.
- Apollonios Rhodios: Scholia, ed. K. Wendel, Leipzig 1935.
- Aratos, ed. D. Kidd, *Aratus. Phaenomena*. Cambridge 1997. See also Jean Martin, Paris 2002. Scholia et vitae: ed. J. Martin. Leipzig 1974.
- Archilochos: M. L. West, *Elegi et Iambi Graeci*, vol. 12. Oxford 1992.
- Aristophanes: *Scholia in Aristophanem*, ed. W. J. W. Koster, Groningen.
- Pars IB, in *Acharnenses*, ed. Nigel G. Wilson. 1975.
- Pars II.3, in *Aves*, ed. D. Holwerda, 1991.
- Pars II.1, in *Vespas*, ed. W. J. W. Koster, 1978.
- Pars III.1, in *Nubes*, ed. D. Holwerda, 1977.
- Aristotle, fragments: O. Gigon, *Aristotelis Opera*, vol. 3, *Librorum deperditorum fragmenta*. Berlin 1987. (See also Rose, *Aristoteles Pseudepigraphus*, in bibliography)
- Demokritos: W. Gemoll, *Nepualii fragmentum περί τῶν κατὰ ἀντιπάθειαν καὶ συμπάθειαν et Democriti περί συμπαθειῶν καὶ ἀντιπαθειῶν*. Programmschrift Striegau, 1884.
- Dionysios Periegetes: A. Garzya, *Dionysii Ixeuticon seu de Aucupio*. Leipzig 1963.
- Dionysios Thrax: Wilhelm Uhlig, *Dionysii Thracis Ars Grammatica*. Leipzig 1883.
- Eudoxos: François Lasserre, *Die Fragmente des Eudoxos von Knidos*, Berlin 1966. (See also Blass, below.)
- Geminus, *Calendarium*: C. Manitius, *Gemini Elementa Astronomiae* (Leipzig 1898) 210-233.
- Geoponica*, ed. H. Beckh. Leipzig 1895.
- Hipparchos: C. Manitius, *Hipparchi in Arati et Eudoxi Phaenomena*. Leipzig 1894.

- Horapollo: Heinz J. Thissen, *Des Niloten Horapollo Hieroglyphenbuch*. Munich 2001.
- Kleostratos: Alberto Bernabé, *Poetae Epici Graeci*, part 1 (Leipzig 1987) 155-157.
- Joh. Lydus, *De Ostentis*, ed. K. Wachsmuth (Leipzig 1863).
- Nigidius Figulus: A. Swoboda, *P. Nigidii Figuli Operum Reliquiae*. Vienna 1888.
- Poseidippos: Colin Austin and G. Bastianini, *Posidippi Pellaei quae Supersunt Omnia*. Milan 2002.
- Poseidonios: Ludwig Edelstein and I. G. Kidd, *Posidonius*. 3 vols. Cambridge 1972-99.
- Ptolemy, *Phaseis*, ed. J. L. Heiberg, *Claudii Ptolemaei Opera quae exstant omnia*, II. *Opera Astronomica Minora* (Leipzig 1907) 1-67.
- , *Tetrabiblos*, ed. F. Boll and E. Boer, *Claudii Ptolemaei Opera quae exstant omnia*, III, 1 (Leipzig 1940) 1-213.
- Suetonius: *Praeter Caesarum libros reliquiae*, ed. A. Reifferscheid (Leipzig 1860) 233-237.
- Theophrastos:
- Fragments: FHSG (see above, abbreviations)
- Opuscula:
- De Ventis*: Victor Coutant and V. L. Eichenlaub, *Theophrastus De Ventis*. Notre Dame 1975.
- Metaphysica*. A. Laks and G. W. Most, *Théophraste. Métaphysique*. Paris 1993 [Budé].
- De Sudoribus* and *De Lassitudine*. W. Fortenbaugh, R. W. Sharples, and M. G. Sollenberger (eds., respectively), *Theophrastus of Eresus: On Sweat, On Dizziness, and On Fatigue*. Leiden 2003.
- Meteorology*: Hans Daiber, "The *Meteorology* of Theophrastus in Syriac and Arabic Translation," in Fortenbaugh and Gutas 166-293.
- De Lapidibus*. D. E. Eichholz, *Theophrastus De Lapidibus*. Oxford 1965.
- Varro Atacinus: Willy Morel and K. Büchner, *Fragmenta poetarum Latinorum epicorum et lyricorum praeter Ennium et Lucilium*. Leipzig 1982.
- Vegetius: M. D. Reeve, *Vegetius: Epitoma Rei Militaris*. Oxford 2004.



## II. Texts of and Commentaries on *Περὶ Σημείων*

- 1497** Aldus Manutius, with the aid of Alexander Bondinus. [Works of Aristotle, Theophrastus, and others.] 5 vols. Venice 1495-98: Aldus Manutius. Vol. 2 (1497) ff. 261<sup>r</sup>–267<sup>r</sup>.

*DS* begins with the heading, as if it were the entire title, *Περὶ σημείων ὑδάτων καὶ πνευμάτων*. Internal headings are *Περὶ σημείων ἀνέμων*, *Π. σ. χειμῶνος*, and *Π. εὐδίας σημείων*. On this volume, see the Introduction, p. 49 f.

- 1541** Simon Grynaeus. *Θεοφράστου ... τὰ μέχρι νῦν Σωζόμενα ἅπαντα. Theophrasti ... Opera, quae ... adhuc restant, omnia*. Basel: Johannes Oporinus, pp. 239-44.

Grynaeus printed a few conjectures alongside the text in the margin. This volume was printed with two different prefaces, first with one by H. Gemusaeus and again with one by Joachim Cameraarius, who praises the recently deceased Grynaeus. This is the first time *DS* was printed with Theophrastus as author, and from this point on, all printed editions ascribe the work to Theophrastus. Gemusaeus does so without question: listing the works printed he says: *Item de aquarum et ventorum signis liber unus [= DS in toto], quem priores [in primis, Aldus] incerti auctoris inscripserunt*. Cameraarius does not touch upon the work's authorship.

- 1552** J. B. Camotius. *Θεοφράστου περὶ φυτῶν ἱστορίαν καὶ περὶ φυτῶν αἰτίων, καὶ τινὰ ἄλλα αὐτοῦ βιβλία περιέχων τόμος VI. Theophrasti Historiam de Plantis et de Causis Plantarum et quosdam alios ipsius libros continens tomus VI*. Venice: Aldi filii. Pp. 583-596.

This is vol. 6 of Camotius' *Ἀριστοτέλους πᾶσαν λογικὴν, ῥητορικὴν, καὶ ποιητικὴν πραγματείαν περιέχων. Aristotelis omnem logicam, rhetoricam et poeticam disciplinam continens*. 6 vols. 1551-53. *DS* is given chapter numbers, but not those set later by Wimmer. The text is essentially that of the Aldine, but careless errors occur.

- 1593** Fredericus Bonaventura. *Anemologiae pars prior, id est De affectionibus, signis, causisque ventorum ex Aristotele, Theophrasto, ac Ptolemaeo tractatus*. Urbino: Apud Bartholomaeum & Simonem Ragusios fratres. Pp. 35-60 (Bonaventura's Latin translation), 223-442 (his commentary).

Part 1 of this work contains translations and lengthy commentaries on Theophrastus *On Winds* and on *DS* (the latter omitted in

the description in *Pre '56 Imprints*). Although Bonaventura lists Theophrastus as author in his table of contents, he is aware that *DS* (which he thinks of as “iv libelli”) *appareant ex peripateticis fontibus fuisse hausta*, and allows for the possibility that the author may be Aristotle (*neque enim horum fortasse Opusculorum [= DS] autor est Theophrastus, cuius tamen autoritas est tanta, sed ipsemet Aristoteles*), on the basis of D.L.’s having listed such a work among Aristotle’s titles and the fact that many of the mss. ascribe *DS* to him. Nonetheless, throughout his commentary Bonaventura consistently refers to the author as Theophrastus. We have not seen the Venice 1594 printing (so rare that even the Marciana does not possess a copy), which, since the page numbers for *DS* are the same, is likely to be unchanged. For more on this edition, see Schmitt (below) 287-290, 293 f.

- 1605** Daniel Furlanus. *Theophrasti Eresii Peripateticorum post Aristotelem principis ...*, interpretibus Daniele Furlano cretensi, Adriano Turnebo. Hanau: Marnius. Pp. 109-130.

Text and facing Latin translation on each page. Each of the four sections of *DS* is followed by textual notes.

- 1613** Daniel Heinsius. *Θεοφράστου τοῦ Ἐρεσίου ἅπαντα. Theophrasti Eresii Graece et Latine opera omnia*. Leiden: H. van Haestens. Pp. 416-440, but Theophrastus’ *De Igne* is printed on pp. 420-437, between *De Signis Ventorum* and *De Signis Tempestatis*.

Th. *De Ventis*, missing from the table of contents, is printed immediately before *DS*. Furlanus’ Latin translation faces Heinsius’ Greek text, which has no chapter numbers. For the most part, Heinsius’ Greek text follows that of Furlanus.

- 1818-21** Johann G. Schneider. *Θεοφράστου Ἐρεσίου τὰ Σωζόμενα. Theophrasti Eresii quae supersunt omnia*. Leipzig. 1 (1818) 782-800 (text); 2 (1818) 466-476 (Furlanus’ Latin tr.), 599-605 (“secundae curae”); 4 (1818) 719-756 (commentary); 5 (1821) lvii-lviii (addenda et corrigenda), 163-173 (commentary with notes on Bartholomaeus’ Latin translation; cf. below, sect. III).

*DS* = fragmentum VI. (It is still fragment 6 in the TLG.) Schneider inserts chapter numbers in each of the four sections of *DS*, beginning with no. 1 every time.

- 1862** Friedrich Wimmer. *Theophrasti Eresii Opera quae supersunt omnia*. Vol. 3. *Fragmenta*. Leipzig (Bibliotheca Teubneriana). Pp. xxii-xxiii (app. crit.), 115-130 (text).

*DS* = fragmentum VI. Wimmer adopts Schneider's chapter divisions, but establishes the modern system of reference to this text by numbering them continuously from 1 to 57.

- 1866** Friedrich Wimmer: *Θεόφραστος. Theophrasti Eresii Opera quae supersunt omnia*. Paris. Pp. xx (app. crit.), 389-398 (text).

Didot edition, with facing Latin translation. There are only a few minor differences between Wimmer's two editions.

- 1894** James G. Wood. *Theophrastus of Eresus on Winds and on Weather Signs, Translated with an Introduction and Notes*, edited by G. J. Symonds. London 1894.

Wood based his translation on the texts of Schneider and Wimmer.

- 1926** Arthur Hort: *Theophrastus: Enquiry into Plants and Minor Works on Odours and Weather Signs*. Vol. 2. Cambridge, Mass. and London. (Loeb Classical Library, 79). Pp. 390-433.

Note that *Odours* and *Weather Signs* do not appear on the spine of the book.

### III. Translations of Περί Σημείων

In addition to those in the editions listed above (1593, 1605, 1613, 1818-21, 1866, 1894, 1926), a thirteenth-century (between 1258 and 1266) Latin translation was produced by Bartholomaeus of Messina. We have seen this only in the edition of Kley (see below), and none of the ten mss. or the four sixteenth-century editions. For its value for reconstituting the Greek text of *DS*, see above, p. 43. See Schmitt (below) 292-294 for a bibliographical account. Nor have we seen the unpublished Latin translation (1574-75) of Jacobus Dalechampius (Paris BN lat. 11, 857); see Schmitt 293.

## IV. Secondary Literature

- Armstrong, Edward A. *The Folklore of Birds*. London 1958.
- Arnott, William G. "Notes on *gavia* and *mergi* in Latin authors," *Classical Quarterly* 14 (1964) 249-262.
- Arrighetti, Graziano. "Problemi di letteratura meteorologica greca," *Maia* 15 (1963) 399-441; esp. 419-441, "Struttura e composizione del 'de signis'."
- Aujac, Germaine. "Les prévisions météorologiques en Grèce ancienne," in Cusset (below) 13-25.
- Bastianini, Guido, and Claudio Gallazzi. *Posidippo di Pella. Epigrammi (P.Mil.Vogl. VIII 309)*. Milan 2000.
- Beavis, Ian C. *Insects and Other Invertebrates in Classical Antiquity*. Exeter 1988.
- Bing, Peter. "Aratus and his audiences," *Materiali e Discussioni* 31 (1993) 99-109.
- Blass, Friedrich. *Eudoxi Ars Astronomica qualis in charta Aegyptiaca superest*. Kiel 1887.
- Böhme, Johannes. *De Theophrasteis quae feruntur περί σημείων excerptis*. Diss. Halle (Hamburg) 1884.
- Böker, Robert. "Wetterzeichen," *RE Supplb.* 9 (1962) 1609-92.
- Bolkestein, Hedrik. *Theophrastos' Charakter der Deisidaimonia als religionsgeschichtliche Urkunde*. Giessen 1929 = *Religionsgeschichtliche Versuche und Vorarbeiten*, 21.2.
- Boll, Franz. "Fixsterne," *RE* 6 (1909) 2407-31.
- Bouffartigue, Jean. "Les prévisions météorologiques tirées de l'observation des animaux: Études des sources antiques," in Cusset (below) 397-413.
- Bowen, Alan C., and B. R. Goldstein. "Meton of Athens and astronomy in the late fifth century B.C.," in Erle Leichty et al. (eds.), *A Scientific Humanist: Studies in Memory of Abraham Sachs* (Philadelphia 1988) 39-81.
- Bowra, C. M. "Signs of storm (Archil. fr. 56 [D])," *Classical Review* 54 (1940) 127-129.

- Brubaker, L. "The Vienna Dioskorides and Anicia Juliana," in Littlewood and Maguire 189-214.
- Burkert, Walter. *Lore and Science in Ancient Pythagoreanism*, tr. E. L. Minar, Jr. Cambridge, Mass. 1972.
- Burnyeat, Myles. "The origins of non-deductive reasoning," in Jonathan Barnes et al. (eds.), *Science and Speculation* (Cambridge 1982) 193-238.
- Burnikel, Walter. *Textgeschichtliche Untersuchungen zu neun Opuscula Theophrasts*. Palingenesia, 8. Wiesbaden 1974.
- Calderón, Esteban. "A propósito de ὁλολυγών (Arato, *Phaen.* 948), *Quaderni Urbinati di Cultura Classica* 67 (2000) 133-139.
- Carapiperis, Leon N. *The Etesian Winds*. Vol. 1. *The Opinions of the Ancient Greeks on the Etesian Winds*. Ἐθνικὸν Ἀστεροσκοπεῖον Ἀθηνῶν. Ὑπομνήματα, Ser. II, Μετεωρολογικά, 9. Athens 1962.
- Cardon, Bartley L. "An unusual lunar halo," *American Journal of Physics* 45 (1977) 331-335.
- Capelle, Wilhelm. *Berges- und Wolkenhöhen bei griechischen Physikern*. Leipzig 1916.
- Cary, Max. *The Geographic Background of Greek and Roman History*. Oxford 1949.
- Clay, Jenny Strauss. "ΑΚΡΑ ΓΥΠΕΩΝ: Geography, allegory, and allusion (Archil. fr. 105 W)," *American Journal of Philology* 103 (1982) 201-204.
- Collins, Derek. "Reading the birds: *Oiōnomanteia* in early epic," *Colby Quarterly* 38 (2002) 17-41.
- Cook, Arthur B. *Zeus: A Study in Ancient Religion*. 3 vols. Cambridge 1925-41.
- Cosenza, Mario E. *Biographical and Bibliographical Dictionary of the Italian Humanists and of the World of Classical Scholarship in Italy, 1300-1800*. Boston 1962.
- Courtney, Edward. *The Fragmentary Latin Poets*. Oxford 1993.
- Cramp, Stanley, et al. *Handbook of the Birds of Europe, the Middle East, and North Africa: The Birds of the Western Palearctic*, 1. Oxford 1977.

- Cronin, Patrick. "The authorship and sources of the *περὶ σημείων* ascribed to Theophrastus," in Fortenbaugh and Gutas (1992) 307-345. [= Cronin "Authorship"]
- . "Weather lore as a source of Homeric imagery," *Hellenica* 51 (2001) 7-24.
- Cumont, Franz et al. *Catalogus Codicum Astrologorum Graecorum*. Vol. 4.4. *Codices Italici*. Brussels 1903.
- . *Catalogus Codicum Astrologorum Graecorum*. Vol. 8, part 1. *Codices Parisini*. Brussels 1929.
- Cunningham, Maurice P. "A note on Latin poetic imitation," *Classical Bulletin* 30 (1953/4) 41-44.
- Cusset, Christophe (ed.). *La Météorologie dans l'antiquité: Entre science et croyance*. Saint-Étienne 2003.
- Daiber, Hans. "The *Meteorology* of Theophrastus in Syriac and Arabic translation," in Fortenbaugh and Gutas (1992), 166-293.
- Davies, Malcolm, and J. Kathirithamby. *Greek Insects*. London 1986.
- Denniston, J. D. *Greek Particles*. 2nd ed. Oxford 1966.
- Dicks, D. R. "Solstices, Equinoxes, and the Presocratics," *Journal of Hellenic Studies* 86 (1966) 26-40.
- Diller, Aubrey. *The Tradition of the Minor Greek Geographers*. New York 1952.
- Dirlmeier, Franz. Review of Kley (below), *Gnomon* 14 (1938) 129-137.
- Doody, Aude. "Finding facts in Pliny's Encyclopaedia: The *summarium* of the *Natural History*," *Ramus* 20 (2001) 1-22.
- Dunlop, Storm. *Weather Photoguide*. London 1996.
- Durán, Martí. "Los ἀρ' ἀγυρέων y la borrachera simpótica en el fragmento 105 West de Arquíloco," *Faventia* 23 (2001) 41-49.
- Elkins, Norman. *Weather and Bird Behaviour*. Calton (UK) 1988.
- Emlyn-Jones, C. J. "ἔτος and ἐνιαυτός in Homeric formulae," *Glotta* 45 (1967) 156-161.
- Erren, Manfred. *Die Phainomena des Aratos von Soloi: Untersuchungen zum Sach- und Sinnverständnis*. Hermes Einzelschriften 19. Wiesbaden 1967. Note esp. ch. 8, "Die Wetterzeichen," 227-300.

- —. *P. Vergilius Maro: Georgica. Bd. 2, Kommentar.* Heidelberg 2003.
- Fakas, Christos. *Der hellenistische Hesiod: Arats Phainomena und die Tradition der antiken Lehrepik.* Wiesbaden 2001.
- Fiedler, Karl G. *Reise durch alle Theile des Königreiches Griechenland.* Leipzig 1841.
- Foerster, Richard. *De Aristotelis quae feruntur physiognomonicis recensendis.* Kiel 1882.
- Fortenbaugh, William W., and Dimitri Gutas (eds.). *Theophrastus: His Psychological, Doxographical, and Scientific Writings.* RUSCH, 5. New Brunswick 1992.
- Fortenbaugh, William W., and Robert W. Sharples (eds.). *Theophrastean Studies: On Natural Science, Physics, and Metaphysics, Ethics, Religion, and Rhetoric.* RUSCH, 3. New Brunswick 1988.
- Fortenbaugh, William W., and Georg Wöhrle (eds.). *On the Opuscula of Theophrastus. Akten der 3. Tagung der Karl-und-Gertrud-Abel-Stiftung vom 19.–23. Juli 1999 in Trier.* Stuttgart 2002.
- Fotheringham, J. K. "Cleostratus," *Journal of Hellenic Studies* 39 (1919) 164-184.
- Fraser, Peter M. *Ptolemaic Alexandria.* 3 vols. Oxford 1972.
- Freeland, Cynthia A. "Scientific explanation and empirical data in Aristotle's *Meteorology*," *Oxford Studies in Ancient Philosophy* 8 (1990) 67-102.
- Garzya, Antonio. "Sull'autore e il titolo del perduto poema 'Sull'Aucupio' attribuito ad Oppiano," *Giornale Italiano di Filologia* 10 (1957) 156-160.
- Gemoll, Wilhelm. *Untersuchungen über die Quellen, den Verfasser und die Abfassungszeit der Geoponica.* Berliner Studien für classische Philologie und Archäologie, 1.1. Berlin 1883; repr. Walluf bei Wiesbaden 1972.
- —. *Nepualii fragmentum περί τῶν κατὰ ἀντιπάθειαν καὶ συμπάθειαν et Democriti περί συμπαθειῶν καὶ ἀντιπαθειῶν.* Programmschrift Striegau, 1884.
- Gigon, Olof. *Aristotelis Opera.* Vol. 3, *Librorum deperditorum fragmenta.* Berlin 1987.

- Gilbert, Otto. *Die meteorologischen Theorien des griechischen Altertums*. Leipzig 1907; repr. Hildesheim 1967.
- Gillespie, W. E. *Vergil, Aratus, and Others: The Weather-sign as a Literary Subject*. Diss. Princeton 1938.
- Graf, Fritz. *Magic in the Ancient World*, tr. F. Philip. Cambridge, Mass. 1997.
- Grayeff, Felix. *Aristotle and his School*. London 1974.
- Greenler, Robert. *Rainbows, Halos, and Glories*. Cambridge 1980.
- Grilli, Alberto. "Virgilio e Arato (a proposito di Georg. 1.187 ss.)," *Acme* 23 (1970) 145-184.
- Hagemeijer, Ward J. M., and M. J. Blair (eds.). *The EBCC Atlas of European Breeding Birds*. London 1997.
- Handrinos, George, and T. Akriotis. *The Birds of Greece*. London 1997.
- Hankinson, R. J. *Cause and Explanation in Ancient Greek Thought*. Oxford 1998.
- Hannah, Robert. "From orality to literacy? The case of the parapegma," in Janet Watson (ed.), *Speaking Volumes: Orality and Literacy in the Greek and Roman World* (Leiden 2001) 139-159.
- . "Euctemon's parapegma," in Christopher J. Tuplin and T. E. Rihll (eds.), *Science and Mathematics in Ancient Greek Culture* (Oxford 2002) 112-132.
- Hanson, Ann E. "Fragmentation of the Greek medical writers," in G. W. Most (ed.), *Collecting Fragments / Fragmente sammeln*. Aporemata 1 (Göttingen 1997) 289-314.
- Harder, F. "Acredula—ὀλογυγών," *Glotta* 12 (1923) 137-144.
- Harlfinger, Dieter. "Die handschriftliche Verbreitung der Mirabilien," in Helmut Flashar, *Aristoteles, Mirabilia* (Berlin 1972) 62-66.
- . *Die Textgeschichte der pseudo-aristotelischen Schrift ΠΕΡΙ ΑΤΟΜΩΝ ΓΡΑΜΜΩΝ: Ein kodikologisch-kulturgeschichtlicher Beitrag zur Klärung der Überlieferungsverhältnisse im Corpus Aristotelicum*. Amsterdam 1971.
- Harlfinger, Dieter, and Dieter Reinsch. "Die Aristotelica des Parisinus gr. 1741: Zur Überlieferung von Poetik, Rhetorik, Physiognomik, De signis, De ventorum situ," *Philologus* 114 (1970) 28-50.



- Haslam, Michael. "Hidden signs: Aratus *Diosemeiai* 46 ff., Vergil *Georgics* 1.424 ff.," *Harvard Studies in Classical Philology* 94 (1992) 199-204.
- Hauser, Albert. *Bauernregeln: Eine schweizerische Sammlung*. Zurich 1975.
- Heninger, S. K., Jr. *A Handbook of Renaissance Meteorology*. Durham, N.C. 1960.
- Heeger, Maximilian R. *De Theophrasti qui fertur περὶ σημείων libro*. Diss. Leipzig 1889.
- Hershbell, Jackson P. "Democritus and the beginnings of Greek alchemy," *Ambix* 34 (1987) 5-20.
- Hercher, R. "Michaelis Pselli Περί ὁμοπλατοσκοπίας καὶ οἰωνοσκοπίας ex codice Vindobonensi," *Philologus* 8 (1853) 166-168.
- Hoffmann, Philippe. *Un mystérieux collaborateur d'Alde Manuce: L'Anonymus Harvardiensis*. Rome 1985 = *Mélanges de l'École Française de Rome*, 97.
- Howard, Luke. *On the Modifications of Clouds*. London 1803.
- Hunter, Richard L. "Written in the stars: Poetry and philosophy in the *Phainomena* of Aratus," *Arachnion* 2 (1995), <http://www.cisi.unito.it/arachne/num2/hunter.html>.
- Inwards, Richard. *Weather Lore: A Collection of Proverbs, Sayings, and Rules concerning the Weather*. London 1898.
- Jermyn, L. A. S. "Weather-signs in Virgil," *Greece and Rome* 20 (1951) 26-37, 49-59.
- Jocelyn, Henry D. "Ancient scholarship and Virgil's use of Republican Latin poetry, II," *Classical Quarterly* 15 (1965) 126-144.
- Kádár, Zoltán. *Survivals of Greek zoological illuminations in Byzantine manuscripts*. Budapest 1978.
- Kahl, Jonathan D. W. *National Audubon Society First Field Guide to Weather*. New York 1998.
- Kaibel, Georg. "Antike Windrosen," *Hermes* 20 (1885) 579-624.
- . "Aratea," *Hermes* 29 (1894) 89-123, esp. sect. 3, on Aratos' weather signs and *DS*, 102-120.
- Kazhdan, Aleksandr. "Geoponika," in: *Oxford Dictionary of Byzantium* (A. Kazhdan et al., eds.), Oxford (1991) 2.834.

- Kenney, E. J. *The Classical Text*. Berkeley 1974.
- Kidd, Douglas. *Aratus. Phaenomena*. Cambridge 1997.
- Kingsley, Peter. "Meetings with Magi: Iranian themes among the Greeks, from Xanthus of Lydia to Plato's Academy," *Journal of the Royal Asiatic Society* 3.5,2 (1995) 173-209.
- Kley, Walter. *Theophrasts Metaphysisches Bruchstück und die Schrift περί σημείων in der lateinischen Übersetzung des Bartholomaeus von Messina*. Diss. Berlin (Würzburg) 1936.
- Kroll, Wilhelm. "Lehrgedicht," *RE* 12 (1925) 1842-57.
- . "Bolos und Demokritos," *Hermes* 69 (1934) 228-232.
- . "Nigidius (2)," *RE* 17 (1936) 200-212.
- . "Plinius (5) der Ältere," *RE* 21 (1951) 271-439.
- Kullmann, Wolfgang, J. Althoff, and M. Asper (eds.). *Gattungen wissenschaftlicher Literatur in der Antike*. Tübingen 1998.
- Lalonde, Gerald V. "Topographical notes on Aristophanes," *Hesperia Suppl.* 20 (1982) 77-81.
- Langholf, Volker. *Medical Theories in Hippocrates: Early Texts and the "Epidemics"*. Berlin 1990.
- La Penna, Antonio. "Esiado nella cultura e nella poesia di Virgilio," in *Hésiode et son influence (Entretiens Hardt 7)* (Vandœuvres-Genève 1962) 213-270 (repr. in G. Arrighetti [ed.] *Esiado: Letture critiche* [Milan 1975] 215 ff.).
- . "Esiado," in *Enciclopedia Virgiliana* (Rome 1984) 1.386-38.
- Lasserre, François. *Die Fragmente des Eudoxos von Knidos*. Berlin 1966.
- Laurenti, R. "La questione Bolo-Democrito," in *L'Atomo fra scienza e letteratura*, Università di Genova, Facoltà di Lettere (1985) 55-74.
- Lehoux, Daryn R. *Paraepgmata, or Astrology, Weather, and Calendars in the Ancient World*. Diss. Toronto 2000. [= *Lehoux Paraepgmata*]
- . "Impersonal and intransitive ἐπισημαίνει," *Classical Philology* 99 (2004) 78-85.
- . "Observation and prediction in ancient astrology," *Studies in History and Philosophy of Science* 35 (2004) 227-246.

- —. *Astronomy, Weather, and Calendars in the Ancient World*. Cambridge, forthcoming 2007.
- Lenz, F. "P. Terentius (88) Varro," *RE* 5A (1934) 692-704.
- Leszl, Walter. "I messaggi degli dei e i segni della natura," in Giovanni Manetti (ed.), *Knowledge through Signs: Ancient Semiotic Theories and Practices* (Bologna 1996) 43-81.
- —. *I primi atomisti*. Forthcoming.
- Littlewood, Antony, and H. Maguire (eds.). *Byzantine Garden Culture*. Washington D.C., 2002.
- Lloyd, G. E. R. *Magic, Reason, and Experience*. Cambridge 1979.
- —. *Aristotelian Observations*. Cambridge 1996.
- —. "Hot and cold, dry and wet in early Greek thought," *Journal of Hellenic Studies* 84 (1964) 92-106; repr. in David J. Furley and R. E. Allan (eds.), *Studies in Presocratic Philosophy*, vol. 1 (London 1970) 255-280.
- Lobel, Edgar. *The Greek Manuscripts of Aristotle's Poetics*. Supplements to the Bibliographical Society's Transaction, 9. Oxford 1933.
- Ludlum, David McW., R. L. Holle, and R. A. Keen. *Clouds and Storms*. New York 1998.
- Ludwig, W. "Die Phainomena Arats als hellenistische Dichtung," *Hermes* 91 (1963) 425-448.
- Maass, Ernst. *Aratea*. Berlin 1892.
- —. *Arati Phaenomena*. Berlin 1893.
- —. Review of Heeger (above). *GGA* (1893) 624-642.
- —. *Commentariorum in Aratum reliquiae*. Berlin 1898.
- McCartney, E. S. (a series of articles on Greek and Roman weather lore, with varying titles) *Classical World* 14 (1921) 89-93, 97-100; 17 (1924) 105-108; 20 (1926) 43-49, 51-54; 22 (1928) 25-31, 33-37; 23 (1929) 2-8, 11-15; 24 (1930) 11-16, 18-29; 25 (1932) 183-192, 200-208, 212-216; 27 (1933) 1-6, 9-13, 17-22, 25-29; 28 (1934) 1-7, 9-12, 17-23, 25-31.
- Mansfeld, Jaap. *The Pseudo-Hippocratic Tract Περὶ Ἑβδομάδων Ch. 1-11 and Greek Philosophy*. Assen 1971.

- Marriott, Paul J. *Red Sky at Night, Shepherds' Delight: Weather Lore of the English Countryside*. Oxford 1981.
- Martin, Jean. *Aratos. Phénomènes*. 2 vols. Paris 2002 [Budé].
- Martini, A., and D. Bassi. *Catalogus codicum graecorum Bibliothecae Ambrosianae*. Milan 1906.
- Maxwell-Stuart, Peter C. "Theophrastus the traveller," *Parola del Passato* 51 (1996) 241-267.
- Mioni, Elpidio. *Aristotelis codices graeci qui in bibliothecis Venetiis adseruantur*. Padua 1958.
- —. *Bibliothecae Divi Marci Venetiarum Codices Graeci manuscripti*. Vol. 1.2. Rome 1972.
- Morau, Paul. *Les listes anciennes des ouvrages d'Aristote*. Louvain 1951.
- Morau, Paul, D. Harlfinger, D. Reinsch, and J. Wiesner. *Aristoteles Graecus: Die griechischen Manuskripte des Aristoteles*. Vol. 1. *Alexandrien-London*. Berlin 1976.
- Morsch, Hans. *De Graecis auctoribus in Georgicis a Vergilio expressis*. Diss. Halle 1878.
- Morton, Jamie. *The Role of the Physical Environment in Ancient Greek Seafaring*. Leiden 2001.
- Müller, Carl Werner. *Gleiches zu Gleichem: Ein Prinzip frühgriechischen Denkens*. Wiesbaden 1965.
- Müller, Wilhelm. *Über den Sprachgebrauch des Theophrastus*. Programmschrift. Arnstadt 1878.
- Mugler, Charles. *Dictionnaire historique de la terminologie optique des grecs*. Paris 1964.
- Neugebauer, Otto. "Astronomische Papyri aus Wiener Sammlungen. II. Über griechische Wetterzeichen und Schattentafeln. Institut für österr. Geschichtsforschung, Pap. graec. Nr. 1," *Sitzungsb. d. Österr. Akademie d. Wissensch., Phil.-hist. Kl.*, 240.2 (Vienna 1962) 29-44.
- —. *A History of Ancient Mathematical Astronomy*. Part 2. Berlin 1975.
- Nilsson, Martin P. *Primitive Time Reckoning*. Lund 1920.
- Nock, Arthur D. "The lizard in magic and religion," *Essays on Religion and the Ancient World* (Oxford 1972) 1.271-276.

- Obrist, Barbara. "Wind diagrams and medieval cosmology," *Speculum* 72 (1997) 33-84.
- . *La cosmologie médiévale. Textes et images: I. Les fondements antiques*. Florence 2004.
- Oliphant, S. "ἡ ὁλοφυγών — What was it?" *TAPA* 46 (1916) 85-106.
- Parry, William E. *Journal of a Voyage for the Discovery of a Northwest Passage from the Atlantic to the Pacific*. London 1821; repr. New York 1968.
- Pfeiffer, Erwin. *Gestirne und Wetter im griechischen Volksglauben und bei den Vorsokratikern*. Diss. Heidelberg (Leipzig) 1914.
- Phillips, J. H. "The Hippocratic physician and ἀστρονομία," in François Lasserre and P. Mudry (eds.), *Formes de pensée dans la collection hippocratique* (Geneva 1983) 427-434.
- Pollard, John. *Birds in Greek Life and Myth*. London 1977.
- Polunin, Oleg. *Trees and Bushes of Britain and Europe*. London 1976.
- . *Flowers of Greece and the Balkans*. London 1980.
- Polunin, Oleg, and A. Huxley. *Flowers of the Mediterranean*. London 1967.
- van Raalte, Marlein. *Theophrastus. Metaphysics, With an Introduction, Translation and Commentary*. Leiden 1993.
- Regenbogen, Otto. "Theophrastos," *RE Supplb.* 7 (1940) 1354-1562.
- Rehm, Albert. "Etesiai," *RE* 6 (1907) 714-717.
- . *Das Parapegma des Euktemon*. Part 3 of Franz Boll, *Griechische Kalender*, Sitzungsab. d. Heidelb. Akademie d. Wissensch., Phil.-hist. Kl. (1913.3).
- . *Griechische Windrosen*, Sitzungsab. d. Bayer. Akademie d. Wissensch., Phil. Kl. 1916.3.
- . "Episemasiai," *RE Supplb.* 7 (1940) 175-198.
- . Review of Zuretti (below), in *Byzantinische Zeitschrift* 40 (1940) 222-225.
- . *Parapegmastudien. Mit einem Anhang: Euktemon und das Buch De signis*. Abh. d. Bayer. Akademie d. Wissensch., Phil.-hist. Kl. n.F. 19 (1941). Munich.

- Reifferscheid, August. *C. Suetoni Tranquilli praeter Caesarum libros reliquiae*. Leipzig 1860; repr. Hildesheim 1971.
- Richter, Gisela M. A. *The Furniture of the Greek, Etruscans, and Romans*. London 1966.
- Robins, R. H. "The authenticity of the *Techne*: The *status quaestionis*," in Vivien Law and I. Sluiter (eds.), *Dionysius Thrax and the Techne Grammatike* (Münster 1995) 13-26.
- Rodgers, Richard. "Κηποποιΐα: Garden making and garden culture in the *Geoponika*," in Littlewood and Maguire (above) 159-175.
- Roehrig, Arminius. *De P. Nigidio Figulo capita duo*. Diss. Leipzig 1887.
- Rose, Valentin. *Aristoteles Pseudepigraphus*. Leipzig 1863.
- Salem, Jean 1996, *La légende de Démocrite*. Paris 1996.
- Samuel, Alan E. *Greek and Roman Chronology: Calendars and Years in Classical Antiquity*. Munich 1972.
- Sandbach, F. H. "Ἀρχα Γυρέων once more," *Classical Review* 56 (1942) 63-65.
- Scarborough, John. "Nicander's toxicology, II: Spiders, scorpions, insects and myriapods, Part I," *Pharmacy in History* 21 (1979) 3-34.
- . "Nicander *Theriaca* 811: A note," *Classical Philology* 75 (1980) 138-140.
- Schlottmann, Wilhelm. *De Auctoribus quibusdam in Plini Naturalis Historiae libro xviii*. Rostock 1893.
- Schmitt, Charles B. "Theophrastus," in Paul O. Kristeller and F. E. Cranz (eds.), *Catalogus Translationum et Commentariorum*. Vol. 2 (Washington 1971) 239-322.
- Sharples, Robert W. "Some aspects of the secondary tradition of Theophrastus' *opuscula*," in Fortenbaugh and Sharples (above), 41-64.
- . *Theophrastus of Eresus: Sources for his Life, Writings, Thought and Influence. Commentary*. Vol. 3.1. *Sources on Physics (Texts 137-223)*. Leiden 1998.
- Sibley, David. *The Sibley Guide to the Birds*. New York 2000.
- Sicherl, Martin. *Griechische Erstausgaben des Aldus Manutius: Druckvorlagen, Stellenwert, kultureller Hintergrund*. Paderborn 1997.

- Sider, David. "The structure of Plato, *Republic* VI," *Rivista di Studi Classici* 24 (1976) 336-348.
- . "Hesiod and Vergil," *Vergilius* 34 (1988) 15-24.
- . "On *On Signs*," in Fortenbaugh and Wöhrle 99-111.
- . "Demokritos on the Weather," in A. Laks and C. Louguet (eds.), *Qu'est-ce que la philosophie présocratique?* (Villeneuve d'Ascq 2002) 287-302.
- . "Posidippus on weather signs and the tradition of didactic poetry," in K. Gutzwiller (ed.), *The New Posidippus: A Hellenistic Poetry Book* (Oxford 2005) 158-176.
- . *Anaxagoras*, 2nd ed. Sankt Augustin 2005.
- Silvester, Norman L. "Notes on the behaviour of certain plants in relation to the weather," *Quarterly Journal of the Royal Meteorological Society* 52 (1926) 15-24.
- Smyth, Herbert W. *Greek Grammar*. Cambridge, Mass. 1956.
- Steinmetz, Peter. *Die Physik des Theophrastos von Eresos*. Palingenesia, 1. Bad Homburg 1964.
- Tannery, Paul. *Recherches sur l'histoire de l'astronomie ancienne*. Paris 1893.
- Taub, Liba. "Destini della scienza greca: Eredità e longevità degli strumenti scientifici," in S. Settis (ed.), *I Greci: Storia, cultura, arte, società*. Vol. 3, *I Greci oltre la Grecia* (Turin 2001) 889-930.
- . *Ancient Meteorology*. London 2003.
- Theander, C. "ΛΥΚΑΒΑΣ, ΛΥΚΑΜΒΗΣ," in Axel Nelson (ed.), *Symbolae Philologicae O. A. Danielsson octogenario dicatae* (Uppsala 1932) 349-351.
- Thompson, D'Arcy W. "The Greek winds," *Classical Review* 32 (1918) 49-56.
- . *A Glossary of Greek Birds*. London 1936.
- . "Archilochus, fr. 56 [D]," *Classical Review* 55 (1941) 67.
- . *A Glossary of Greek Fishes*. London 1947.
- Thorndike, Lynn. *A History of Magic and Experimental Science*. New York 1934.

- Threatte, Leslie. *The Grammar of Attic Inscriptions*. 2 vols. Berlin 1980, 1996.
- Vogt, Sabine. *Aristoteles: Physiognomonica*. Berlin 1999.
- Wærn, Ingrid. *Γῆς ὄσσεα: The Kenning in pre-Christian poetry*. Uppsala 1951.
- Wagner, Ewald, and P. Steinmetz. *Der syrische Auszug der Meteorologie des Theophrast*. Akademie d. Wissensch. u. d. Lit. in Mainz. Abh. d. geistes- u. sozialwiss. Kl. Wiesbaden 1964.
- Walkinshaw, Lawrence. *Cranes of the World*. New York 1973.
- Waschkies, Hans-Joachim. *Von Eudoxos zu Aristoteles: Das Fortwirken der eudoxischen Proportionentheorie in der aristotelischen Lehre vom Kontinuum*. Amsterdam 1977.
- Wathelet, Paul. "La météorologie dans les comparaisons homériques," in Cusset (above), 203-216.
- Waszink, Jan H. "Bolos," *Reallexikon für Antike und Christentum*, Stuttgart, 2 (1954) 502-508.
- Webb, E. J. "Cleostratus redivivus," *Journal of Hellenic Studies* 41 (1921) 70-85.
- Wellmann, Max, "Aegyptisches," *Hermes* 31 (1896) 221-253.
- . "Bolos (3)," *RE* 3 (1897) 676 f.; Supplb. 1 (1903) 255.
- . "Die Georgika des Demokritos," *Abh. d. Preussischen Akademie d. Wissensch.*, Phil.-hist. Kl. (1921.4) Berlin.
- . "Die Φυσικά des Bolos Demokritos und der Magier Anaxilaos aus Larissa," *Abh. d. Preussischen Akademie d. Wissensch.*, Phil.-hist. Kl. (1928.7) Berlin.
- Wender, Dorothea. "From Hesiod to Homer by Way of Rome," *Ramus* 8 (1979) 59-64.
- Wenskus, Otta. "Columellas Bauernkalender zwischen Mündlichkeit und Schriftlichkeit," in Kullmann et al. 253-262.
- Wenskus, Otta. *Astronomische Zeitangaben von Homer bis Theophrast*. Stuttgart 1990.
- Wessely, C. "Bruchstücke einer antiken Schrift über Wetterzeichen," *Sitzungsb. d. Wiener Akademie d. Wissensch.*, Phil.-hist. Kl. 142.1 (1900).



- Whitehead, Jessie M. "Fifth century manuscripts of Aristotle," *Harvard Library Notes* 28 (1938) 143-144.
- Wilkinson, L. P. *The Georgics of Virgil: A Critical Survey*. Cambridge 1969.
- Wilson, Nigel G. "The manuscripts of Theophrastus," *Scriptorium* 16 (1962) 96-102.
- Wood, James G. *Theophrastus of Eresus on Winds and on Weather Signs, Translated with an Introduction and Notes*, edited by G. J. Symonds. London 1894.
- Wöhrle, Georg. *Anaximenes aus Milet: Die Fragmente zu seiner Zeit*. Stuttgart 1993.
- Zuretti, Carlo O. *Catalogus Codicum Astrologorum Graecorum*. Vol. 11. *Codices Hispanienses*. Part 2. *Codices Scorialenses Matritenses Caesar-augustani*. Brussels 1934. [reviewed by Rehm 1940; see above]

## INDEX OF IMPORTANT WORDS

- αἶθυια**] shearwater, diving under water 28.191.
- ἀκρόνυχος**] at nightfall 2.11, 2.14.
- ἀκρωρεία**] daybreak 21.140, 42.306.
- ἄκτις**] solar ray 11.73, 11.76, 13.84, 26.181; ray from a lamp 14.95.
- ἄλεκτρυνών**] rooster, searching for lice 17.118; flapping its wings 18.121.
- ἄμπωτις**] ebb tide 29.198, 29.203.
- ἄλως**] halo, solar 22.152, 22.153; lunar 31.219, 51.371.
- ἀναδύομαι**] rise up, of a dolphin breaking water 19.129.
- ἀνατέλλω**] rise (above the horizon), of stars and constellations (cosmical and heliacal; e.g., 1.7, 2.10, 2.12) and of the daily rising of the sun (e.g., 11.73, 26.178).
- ἀνατολή**] rising, of stars (2.10, 2.13, 6.38, 6.43, 9.58) or the sun (10.65, 35.255).
- ἄνειμι (ibo)**] rise (above the horizon) 13.85, 50.363.
- ἄνεμος**] wind 11.77 and *passim*. Synonymous with πνεῦμα, q.v.
- ἀνεμώδης**] portending wind 18.125, 26.179, 28.197, 28.201, 34.241, 44.331.
- ἀπαρκτίας**] the north wind (another name for Boreas) 35.251, 36.259, 36.264, 36.265, 37.268.
- ἀπηλιώτης**] the east wind 35.255.
- ἀπολείπω**] fail, be wanting (of the moon) 5.35 (of the sun) 38.275.
- ἀπόλειψις**] failing, being absent (of the sun) 5.36. Synonymous with ἔκλειψις, q.v.
- ἀράχνιον**] spiderweb, in motion 29.29.199.
- ἀργέστης**] the north-west wind 35.251, 36.258, 36.264, 36.265, 37.268.
- Ἄρκτοῦρος**] the star Arktouros (Arcturus) whose heliacal rising in mid-September was used as a season marker 2.12, 23.157, 41.299.
- ἄστηρ**] star; used either to describe the two stars known as the Asses (23.155; see Ὀνος), comets (“shooting stars”; 13.83, 34.246, 37.270), or the planet Mercury (46.339).
- ἀστραπαῖος**] characterized by lightning 37.67.
- ἀστραπή**] lightning 21.138, 21.142, 21.144, 32.223, 32.224, etc.
- ἀστράπτω**] flash lightning 21.140, 21.141, 32.226.
- ἀστρολογέω**] be an astronomer 4.30.
- ἄστρον**] star, plural only; mentioned only theoretically at the beginning and the end (1.7, 2.9, 2.11, 57.21), but this word is never used as part of a weather sign. See ἄστήρ.
- ἀστρονομικός**] at 1.7, either masculine (“astronomers”) or neuter (τὰ ἀστρονομικά, “astronomy”); see the commentary.
- ἀστρονόμος**] astronomer 4.24.
- αὐλὼν**] valley or hollow, a site for weather signs 3.17.
- αὐχμηρός**] dry 24.165.
- αὐχμός**] drought 17.117, 26.181, 34.247, 44.327, 49.358.
- ἀφανισμός**] disappearance, occultation 2.8.
- βάτραχος**] frog, croaking 15.98, 15.100.
- βορέας/βορρᾶς**] the north 26.182, 30.212, 41.300; or the north wind (Boreas) 29.203, 33.234, 34.247, 53.292.

- βόρειος]** pertaining to the north (wind) 21.141, 27.185, 29.199, 29.202; may be used substantively (singular or plural).
- βορεύω]** blow from the north 53.390 (nowhere else in Greek literature).
- βορροᾶθεν]** in or from the north 11.72, 21.143, 22.152, etc.
- βοῦς]** cow/ox 17.117, licking its hoof or sniffing the air 15.102; digging at the earth 41.297; eating more 41.300; lying on its left side 54.395. See also πρόβατα.
- βροντή]** thunder, in winter at dawn 21.136; in summer in afternoon or evening 21.138; in summer with lightning 32.225, 32.230.
- γέρανος]** crane, flying early in formation 38.276; flying straight 52.380.
- γῆς ἔντερα]** earth-guts, i.e., worms (a kenning) 42.306.
- γλαῦξ]** owl, making low hoots 51.381; sea owl, hooting 51.383.
- γνώμων]** an expert, guide 3.22.
- δείλη]** dusk, evening 9.58, 22.154, 23.161.
- δελινός]** at evening 33.234.
- δελφίς]** dolphin, diving near land 19.129.
- διχομηνία]** midmonth 27.189.
- διχοτομέω]** divide (time periods) into parts 6.42, 8.51. See next entry.
- διχοτομία]** division into parts; here of time periods 6.40, 9.61.
- διχότομος]** divided; used substantively of the month: midmonth 38.276.
- δύσις]** setting below the horizon, of a star, constellation 2.8, 6.39, 6.43, 7.50, etc. The setting can be for the night or be either cosmical or heliacal; see on 2.8.
- δύνω]** set, of stars or the sun. 2.10, 10.68, 11.70, 13.85. See συνδύνω.
- δύομαι]** set, of stars, constellations, or the sun 1.7, 7.46 2.12, 6.42, 11.70. Its synonym is δύνω, q.v. Also used once of birds diving, 28.192.
- δυσμή]** sunset 51.376.
- ἔαρ]** spring (the season) 11.70, 24.166, 24.167, 32.230, etc.
- ἐαρινός]** pertaining to spring 48.352, 56.409.
- εἰσδύομαι]** enter into, of wrens and robins entering and hiding in their nests 39.282.
- ἐκλείπω]** be eclipsed 13.86.
- ἔκλειψις]** eclipse 5.37.
- ἐκνεφίας]** hurricane 30.210, 36.264, 37.266.
- ἐνιαυτός]** year, either in the usual sense (note especially 6.41, and *passim*) or of Meton's "great year" (4.28); a season 56.406.
- ἐπινέφελος]** obnubilated 31.221.
- ἐπισημαίνω]** be significant 11.71, 22.147.
- ἐριθεύς]** robin, hides in its hole 39.280.
- Ἑρμοῦ ἀστήρ]** (the planet) Mercury, appearing in winter 46.339.
- ἐρωδιός]** heron, crying in the morning, etc., 18.123; flying from the sea 28.195.
- ἐτησίαι]** Etesian winds, blowing a long time 34.240.
- ἔτος]** year or, used loosely, season 25.174, 40.294, 54.397. See the commentary on 25.174-5.
- εὐδία]** fair weather, *passim* and the predicted outlook in section 4. See comm. on 1.4. The plural has the sense of the singular (1.4, 503.67).
- εὐδαινός]** fair (weather) 43.319, 44.324, 48.354, 50.366, 50.368, 51.371, 51.373, etc.
- εὐρος]** the south-east wind (Euros) 35.255, 36.260.
- ἐχῖνος]** hedgehog, blocking an entrance against the wind 30.211.
- ἑωθινός]** at dawn 10.65, 10.69, 21.139.
- ἑῶς]** at dawn, modifying risings of stars, whether cosmical/heliacal (2.10, 2.14). See ἑωθινός.
- ζέφυρος]** the west wind (Zephyros) 21.141, 27.186, 36.259; the west 47.349.

- ξοφερός]** dark, dusky 43.314.
- ζόφος]** darkness 56.407.
- ζοφώδης]** portending darkness 12.81, 23.156, 27.190.
- ζῶον]** an animal, here used of those that provide weather signs 5.31, 25.173.
- ἥλιος]** the sun, a rich source of signs; note especially 5.33 and *passim*.
- ἡμέρα]** daylight (6.41, 9.57, 10.65, etc.) or whole day (10.66, 11.70, etc.).
- θερινός]** pertaining to summer 7.49, 21.137.
- θέρους]** summer 17.115, 20.133, 21.142, etc.
- θρακίας]** the north-north-west wind 35.251, 36.258, 36.264, 36.265, 37.268.
- ἰέραξ]** hawk, searches for lice 17.114.
- ἰουλος]** centipede, climbing the walls in great numbers 19.128.
- ἶρις]** rainbow 22.147, 22.148; or rainbow-like rays of a lamp 13.89.
- ισημερία]** equinox 7.45, 7.48, 7.50, 20.135, 23.158, 56.410, 57.422.
- ισημερινός]** equinoctial 35.255.
- ἵσταμαι]** stand up; here, establish oneself (of the beginning of the month) 5.36.
- καικίας]** the north-east wind 36.257, 36.261, 36.263.
- καῦμα]** heat 46.340, 48.352.
- καυματίας]** burning hot (masc. adj., always modifying the sun) 11.77, 26.178, 26.180, 50.363. This word appears nowhere else in Greek literature.
- καυματώδης]** portending heat 36.259.
- κέπφος]** *Puffinus yelkouan*, flying during a calm 28.193.
- κεραία]** (lunar) crescent 27.187.
- κοῖλος, fem. κοιλάς]** hollow, the neuter used substantively as a synonym for αὐλών, q.v. 3.21, 20.131, 22.149, 48.353. Also applied to “hollow” suns (26.179) or clouds (51.373).
- κολοίος]** jackdaw, screeching 16.110; flapping its wings 18.121; crying late in the day 39.284; flying from the south 40.291.
- κομήτης]** comet 34.245, 57.419.
- κόραξ]** raven, making many sounds or searching for lice 16.106; screeching 16.111; making an unusual sound. etc. 16.112; crying late in the day 39.284; making many sounds 40.290; crying softly 52.384.
- κορώνη]** crow 16.104; crying late in the day 39.284; crying early 53.387.
- κύων]** dog, rolling on ground 29.198, digging with its paws 42.305, lying on its side 54.396.
- Κύων]** The “dogstar” Seirios (Sirius) 2.15, 23.157, used as a season marker.
- λίψ]** the south-west wind 36.257, 36.262.
- λύκος]** wolf, howling 46.342.
- λύχνος]** oil-lamp, whose flames and ash were read for signs 13.89, 13.90, 14.94, 34.248, 42.308, 42.309, 54.397.
- μείς/μήν]** crescent moon 12.80, 12.82, 27.185, etc.; in the sense of month 5.34.
- μέλιττα]** bee, not flying far 46.341.
- μεσημβρία]** mid-day 9.58, 21.137, 57.417.
- μέσης]** the north-north-east wind 36.258, 37.268.
- μετοπωρινός]** autumnal 2.14.
- μετόπωρον]** fall, autumn 34.240, 37.267, 41.297, 44.234, etc.
- μύια]** fly, biting excessively 3.159.
- μύκης]** plural μύκητες/μύκαι ash (“snuff”) formed on lamp wicks 14.91, 14.96, 34.248, 42.311.
- μύξα]** wick (of a lamp) 54.399.
- μυρμηκιά]** anthill 22.150.
- μύρμηξ]** ant, carrying its pupae 22.149.
- μῦς]** mouse, squeaking and dancing 41.304, fighting over food 49.361.
- νεφέλη]** cloud, synonymous with νέφος 11.73, 43.321.
- νεφέλιον]** cloud, not necessarily a diminutive (11.70, 20.132, 43.322), or a nebula of stars (23.156).
- νέφος]** cloud 3.19, 11.75, 36.261, 36.262, 45.333, 45.355, etc.

- νήγεμος]** calm, windless 34.241.
- νηττα]** duck 18.122; flying under eaves 18.120; diving under water 28.191.
- νιφετός]** snowfall 42.309.
- νιφετώδης]** portending snow 36.258.
- νότιος]** to the south, southern, characterized by southern winds 13.90, 14.91, 27.188, 29.202, etc.; may be used substantively.
- νοτόθεν]** in or from the south 11.71, 21.140, 22.152, 30.212, 53.391.
- νότος]** the south 26.182, 29.204, 33.232, 33.235, 40.292; or the south wind (Notos) 21.140, 34.247, 35.254.
- νουμηνία]** (time of the) new moon 8.53, 8.55.
- ὀγδόη]** eighth (day of the month) 8.52, 8.53, 8.54.
- ὀλολγών]** tree frog, croaking 42.305.
- ὄμβρος]** shower 47.345.
- ὀμίχλη]** mist 52.379, 56.410, 56.414.
- ὄνος]** ass, snapping its ears 41.302.
- Ὄνος]** one of the Asses, two stars in Cancer; when overclouded 23.155, 43.314; when clear 51.371.
- ὀπώρα]** the season from late summer to early fall 48.356.
- ὄρθριος]** at dawn 18.123.
- ὄρθρος]** dawn 26.183.
- ὄρνις]** (unspecified) bird 40.283, 41.303, 47.346; nonaquatic 15.97, island-dwelling 17.116, pecking at flies 17.118.
- ὄρος]** mountain, a good place to observe the sky for weather signs (3.17) or itself providing a sign (31.215, 34.242, 34.245, 45.333, 51.374).
- ὄρχιλος]** wren, entering nest 39.281; leaving nest 53.388.
- πανσέληνος]** (time of the) full moon 8.52, 8.54, 8.55, 12.79, 50.365.
- πάππος]** thistle, blown in the air 37.269.
- παρήλιος]** sun dog, mock sun (usually seen in pairs), sign of rain 22.151, 29.204.
- πάχνη]** frost 34.247.
- Πλειάς]** the Pleiades (constellation), whose fall setting and spring rising were well known season markers 2.15, 6.42, 7.46, 7.49, 7.50, 43.316. Only in the singular.
- πλεύμων]** jelly fish 40.293.
- πλημμύρα]** flood tide 29.202.
- πνεῦμα]** wind, the outcome predicted in section 2; 1.4 et *passim*. Synonymous with ἄνεμος.
- πνευματώδης]** portending wind 31.219.
- πνέω]** blow (of winds) 32.227, 33.232, 34.240, 34.243, etc.
- πνιγηρός]** stifling, of heat 44.330, 48.356.
- πνίγος]** stifling heat 48.351.
- πούς]** foot, sweaty 30.209.
- πρίνος]** evergreen oak 45.332, 49.357.
- προανατέλλω]** rise beforehand 2.11.
- πρόβατα]** (small) cattle, copulating 25.175, 40.295, 54.394; digging at the earth 41.297; fighting for food 41.302.
- προγινώσκω]** predict, be able to read signs 6.39.
- ράβδοι]** rays or streaks of light 11.71.
- σαλαμάνδρα]** name given to a kind of lizard 15.99.
- σαύρα]** lizard 15.99.
- σελήνη]** the moon, whose varying shape and appearance provide a rich source of signs; note especially 5.33 and *passim*.
- σημαίνω]** be a sign of 10.68 and *passim*.
- σημεῖον]** sign, in *DS* almost always a sign of change in the weather, whether imminent or more long term 1.4 and *passim*. See comm. on 1.4. At 11.72, it refers to a black mark on the sun.
- σάλαξ]** blind-rat, kept in a vessel 49.359.
- σπίνος]** finch, singing, usually at dawn 19.126, 23.160, 39.281, 40.289.
- στάσις]** station (i.e., direction) of a wind 35.249.
- στρουθός]** sparrow, crying at evening 28.194, white 39.284.

- συνδύνω]** set with, i.e., at the same time as 2.9.
- σύννοδος]** conjunction (of months); i.e., the time of the new moon 5.34.
- σφήξ]** wasp, in great numbers in fall 47.346.
- σχιῖνος]** mastic, its fruiting 55.401.
- τετράς]** fourth day (of the month) 5.35, 5.36, 8.52, 8.54, 8.56, 27.189, 38.276.
- τέττιξ]** cicada, appearing in great numbers 54.396.
- τευθίς]** squid 40.292.
- τροπή]** solstice 4.27, 7.45, 7.47, 7.49, 30.206, 57.422.
- ὑδατικός]** indicative of rain 11.73, 17.118, 19.128, 21.144, 22.153, 23.157.
- ὑδατώδης]** watery; i.e., rainy 24.167, 35.255.
- ῥόδωρ]** rain, usually in the singular; only rarely in the plural in the same sense as the singular (13.90, 57.418), otherwise the plural means “rains” (24.165, 35.256, 48.352, 56.414). See comm. on 1.4. At 15.97, it simply means water.
- ῥεῖ]** it is raining 17.119, 51.376.
- ὑέτιος]** rainy 44.327.
- ὑψηλός]** lofty, on high; applied to mountainous locations (see ὄρος) 3.18, 22.150.
- Φάτνη]** the Manger, a nebula in Cancer; 23.156, 43.314, 51.371.
- φθίνω]** perish, waste away; here applied to the waning (days of the) month 5.35, 8.55.
- φρῦνος]** toad, taking a bath 15.98.
- φύω]** in the middle voice and used substantively, τὰ φυόμενα means “plants” 25.173.
- φώκη]** seal, bellowing while holding an octopus 40.292.
- φῶς]** light (of the moon) 5.35.
- χάλαξα]** hail 25.169, 56.409.
- χαλαζώδης]** portending hail 36.257.
- χειμάζω]** be(come) winter, wintry; used impersonally 27.189, 38.276, 38.277, 38.278, 44.325, 50.367.
- χειμερινός]** stormy, (27.186, 40.294), or wintry (21.136, 24.166, 30.206).
- χειμέριος]** stormy (5.34, 11.76, etc.) or a sign of storm (39.280, 39.283, 39.284, 40.289, 40.291, 40.292, 40.293, 41.298, etc.)
- χειμών]** either storm (1.4 and *passim*) or winter (2.13 and *passim*).
- χειλιδών]** swallow, hitting the surface of water 15.101; white 39.285.
- χήν]** goose, noisier than usual and fighting for food 39.280.
- χιονικός]** signaling snow 42.313.
- χιών]** snow, snowstorm 24.167, 34.247, 40.290.
- ψῦχος]** period of cold 46.340, 57.419, 57.420.
- ψυχρός]** cold 44.325, 44.329, 48.355.
- ῥορα]** season 6.40, 9.62, 46.344.
- \*Ωρίων]** the constellation Orion, used as a season marker 2.15.

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